TWENTY-FIRST ANNUAL REPORT

OF THE

Illinois State Beekeepers' Association

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Springfield, Illinois

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LETTER OF TRANSMITTAL.

OFFICE OF THE SECRETARY,
HAMILTON, ILLINOIS, *March 15, 1922.*

To His Excellency, Len Small, Governor of the State of Illinois.

SIR: I have the honor to transmit herewith, the Twenty-first Annual Report of the Illinois State Beekeepers' Association.

M. G. DADANT, *Secretary.*

FATHER LANGSTROTH,

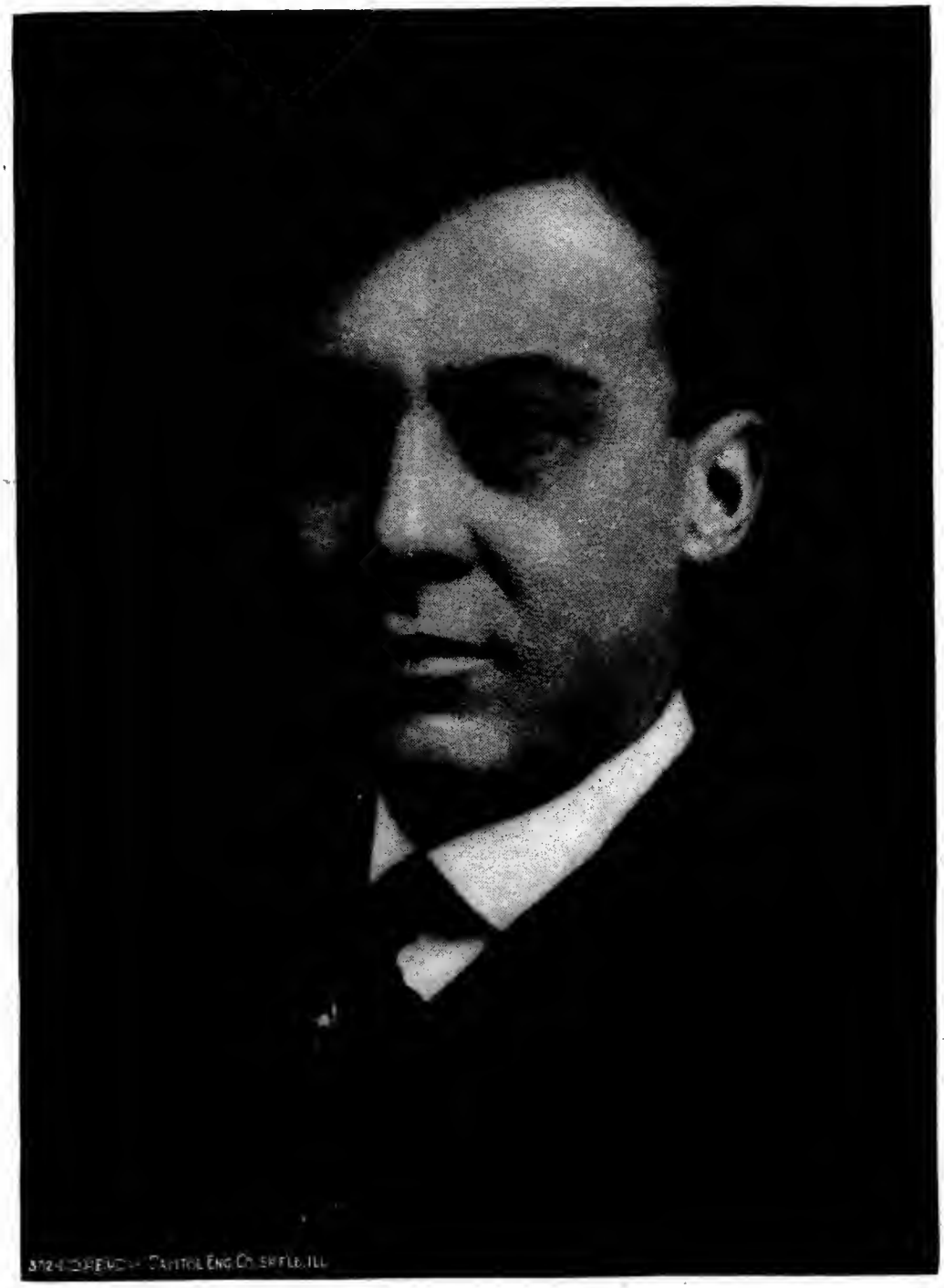
1810—1895

Inventor of the Movable Frame Hive.

OFFICERS OF THE ILLINOIS STATE BEEKEEPERS' ASSOCIATION FOR 1922.

Dr. Albert C. Baxter, Springfield.	President
A. L. Kildow, Putnam.	State Inspector of Apiaries
James A. Stone, Farmingdale.	1st Vice President
Harry L. King, Springfield.	2d Vice President
W. H. Williams, Pekin.	3d Vice President
S. A. Tyler, Emden.	4th Vice President
C. F. Bender, Newman.	5th Vice President
M. G. Dadant, Hamilton.	Secretary
George Seastream, Pawnee.	Treasurer

List of members and index in back of report.



DR. A. C. BAXTER,

President of the Illinois State Beekeepers' Association.

PROCEEDINGS

OF THE

TWENTY-FIRST ANNUAL SESSION

OF THE

Illinois State Beekeepers' Association

Wednesday and Thursday, Dec. 14-15, 1921

St. Nicholas Hotel, Springfield, Illinois

BEEKEEPING.

I am proud to be a beekeeper.

The 800,000 members of my craft add $20,000,000 each year, to Uncle Sam's agricultural dividends.

Our bees increase by cross pollination, the yield of fruiting plants, in return for the nectar they sip.

Beeswax is required in the manufacture of many highly polished articles of commerce.

Sturdy pines and flowering linden trees go to make our beehives.

Nectar transformed by the bees becomes honey, an energizing food.

Our craft makes possible a compliance with the biblical injunction: "Eat thou honey, because it is good."

I am truly proud to be a beekeeper.

KENNITH HAWKINS.

PROCEEDINGS OF THE TWENTY-FIRST ANNUAL SESSION OF THE ILLINOIS STATE BEEKEEPERS' ASSOCIATION.

Wednesday and Thursday, December 14-15, 1921, St. Nicholas Hotel, Springfield, Illinois.

The meeting was called to order, President A. C. Baxter, in the chair.

Minutes of the last annual meeting were read and approved.

Reports of the Secretary and Treasurer were presented and referred to an Auditing Committee for review.

The President read his address, which was as follows:

President's Address.

Members of The Illinois State Beekeepers' Association, Ladies and Gentlemen:

This morning we are assembled in the Thirty-first Annual Meeting of the Illinois State Beekeepers' Association. To you who have attended these meetings from year to year since the organization of this association I extend sincere greetings. To you who are in attendance for the first time, and to those who are visitors I extend a hearty welcome and invite your attention and participation in the deliberations of this association.

The past season, has been a very poor one for most of the Illinois beekeepers. The beekeepers in the northern part of the State fared much better than those of the central and southern parts and some large crops of honey were obtained in the favored sections. This past season the honey crop has been poor over most of the State and in the central and southern part the bees have not secured sufficient honey to carry them through to the honey flow next spring.

It is hard for some beekeepers to realize that plenty of good stores in the hive for winter and spring are necessary to harvest a crop the next season. To those beekeepers who have colonies light in stores we urge early feeding in the spring to insure the rapid building up of the colonies so as to be ready for the spring flow of nectar. We find that beekeeping is like other lines of agricultural industry, that beekeepers are liable to have poor crops and the returns from the apiary will be light. But despite the poor season, which most beekeepers have just passed through, it is doubtful whether there is a more optimistic lot of people in any business. We are already planning for the coming season with hopes of a better crop.

GEO. SEASTREAM,

Treasurer of the Illinois State Beekeepers' Association.

During the last summer I attended one field meeting of beekeepers and five Farmers Institutes and at all of these was asked more questions by beekeepers on most elementary questions about bees, than could possibly be asked by a flock of small boys. If I were asked what is the greatest handicap to beekeeping my answer would be *ignorance*. Anyone who travels among beekeepers throughout the State must arrive at the inevitable conclusion that many of them do not know the commonest facts about bees, which appear in all books on the subject. Many of them read no books, but confine their reading to the news of beekeeping as given in the journals. We find them much concerned with the latest market reports, failing to realize that they are losing half the possible crop, through a lack of knowledge of bees. As Dr. Phillips has said: "It is a greater error to fail to produce half the crop through ignorance than it is to sell the crop for half what it is worth." The best beekeeper; the one who thoroughly studies his bees and who is best informed as to bees; is not the beekeeper who has the most trouble over marketing his crop. Those beekeepers who study and apply their knowledge to beekeeping usually have no marketing "problem," because their product is so much better than that of the average beekeeper that it "sells itself."

This amazing ignorance can only be removed by education which must be secured by the cooperation of the enlightened beekeepers and the State University. For a number of years we have endeavored to have a Department of Apiary instruction at our State University, but due to lack of money and to lack of interest we are still without adequate educational advantages in apiary instruction for our agricultural students. It therefore behooves us as an association to exert our best efforts to extend the function of this association by the formation of an association in each county in the State as a competent part of the State Association. Then our membership will be larger, our influence wider and greater, and we will be able to get the support from the State needed to carry on the work.

The chief difficulty the County Associations will meet is to keep alive. This is entirely a question of leadership. The President may be a live-wire and keep up interest, but officially the Secretary is the heart and soul of any association. If the right selection is made in filling this most important office all is well, if not the society may expect an early demise, or a post mortem existence awaiting retarded interment. But by the development of strong County Associations with the State Association a federation of the counties we could solve most of the problems that confront the beekeeper today. Never can we expect to receive greater aid from the State, than we now receive until we help ourselves. It is only by united effort of the beekeepers, that Illinois can take its place as a progressive honey producing State. Let each and every member of this association return to his home with a high resolve to interest his beekeeping neighbor, who may belong to that ignorant or uninformed class, and make Illinois one of the best and biggest honey producing States in the Union. (Applause.)

THE PRESIDENT.—The next in order is the Question Box. I will place Mr. King in charge of the Question Box.

MAURICE G. DADANT,

Secretary of the Illinois State Beekeepers' Association.

I am going to vary the program a little. The papers were not to start till this afternoon, but I am going to ask Mr. M. G. Dadant to read his father's C. P. Dadant, paper.

Illinois Place in Beekeeping.

(By C. P. Dadant.)

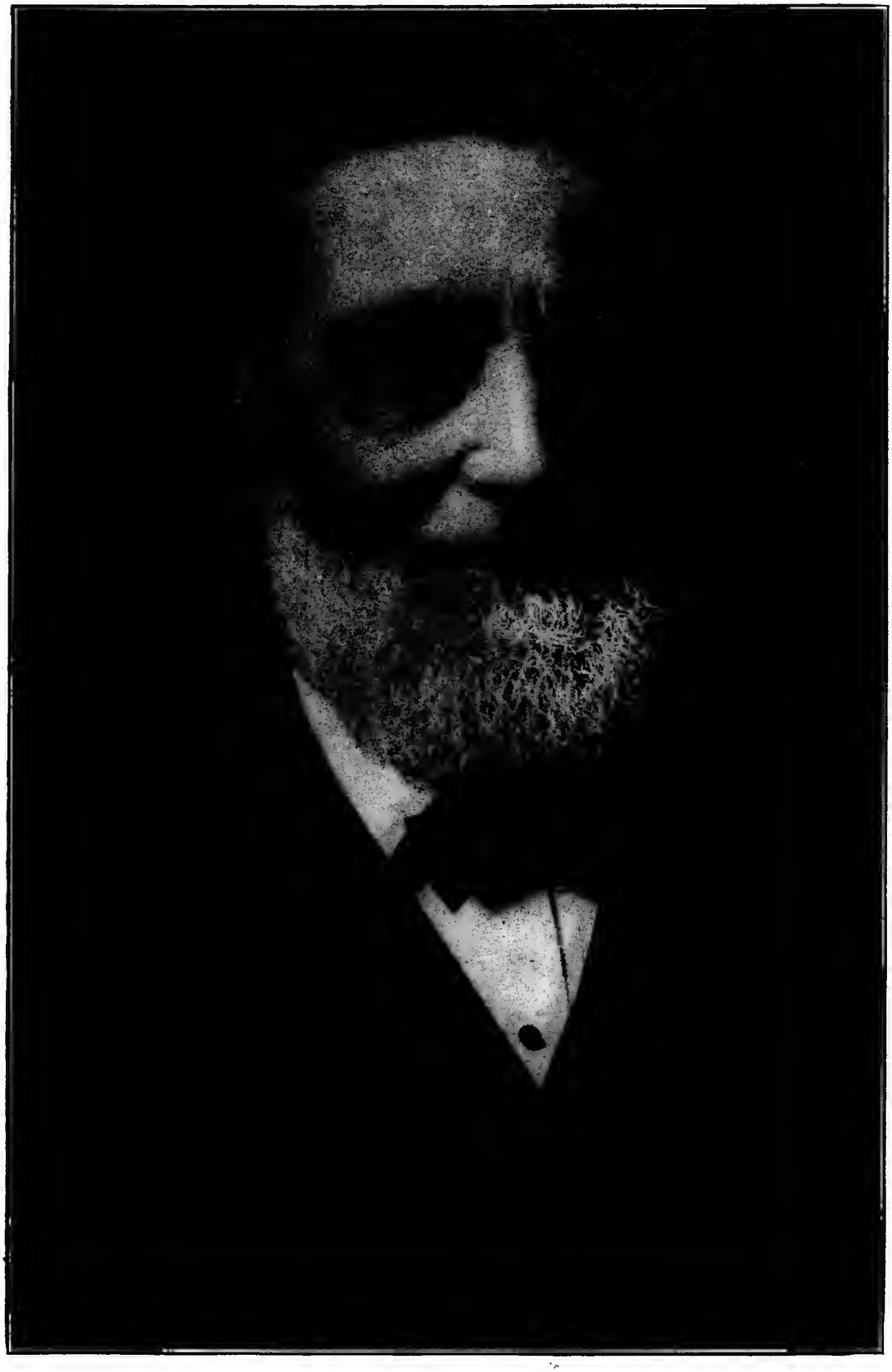
Illinois is one of the very best states in the Union, especially in agricultural matters. Yet, in beekeeping it does not hold the rank to which it should be entitled. It was the home of one of the earliest pioneers in beekeeping, M. M. Baldridge, who was a member of the first National Convention ever organized. It was also the home of Mrs. Lucinda Harrison, who, for years, wrote of beekeeping in the Prairie Farmer. It has been the home of the American Bee Journal ever since 1872. Last, but not least, one of the most successful beekeepers and writers, the man who was called "The Nestor of American Beekeeping" Dr. C. C. Miller, spent the greater part of his days with us and died among us, after a life of the greatest usefulness to beekeepers the world over. So Illinois is noted for illustrious beekeepers.

Illinois is a good State for honey production, and its honey is of fine grade. For 30 years, our association has been chartered and has received a small appropriation from the State, a very favorable position when compared with most of the different State organizations. But we have not taken advantage of this as we might. In spite of the appointment of a bee inspector, we have allowed disease to invade our apiaries; and the presence of numerous box hive apiaries in addition to a lack of information on the part of the average farmer, has prevented such measures as we need to eradicate all traces of brood diseases.

Iowa, Michigan, California, Minnesota, Wisconsin and several other states have more important experimental stations and courses in beekeeping than we. Minnesota has a fine building, at the State Fair grounds, entirely devoted to bee exhibits and I am told it is fully occupied every summer. In short we are holding a secondary position in the promotion of our business, although our location in the most central part of the Mississippi Valley should enable us to dispose of our crops of honey in so successful a manner that our beekeepers would reap much greater benefits.

Thus we should succeed, not only in producing more honey in more thriving apiaries, but we should be enabled to sell it at most remunerative prices. The following requirements are easy to secure, if we only bestir ourselves:

We should secure from the State of Illinois an appropriation sufficient to keep several men constantly in the field every summer, educating the casual beekeeper among the farmers on how to care for his bees in a way that they will not be a menace to the commercial apiarist who keeps bees as a permanent business. It is very much in this as it is in fruit growing: many people keep just enough of an orchard, without particular care, to maintain undesirable conditions which the commercial fruit grower has to combat continually. The man who owns only a



DR. C. C. MILLER,

1831—1920

"The Nestor of American Beekeeping."

dozen apple trees and as many peach trees and pear trees, pays no attention to them and propagates codling moths, San Jose scale and other spreading pests, so that, no matter how much the orchardist follows the requirements of progress, he is compelled to continue an unpleasant fight against disease and insects that should be made to disappear. The same troubles and identical conditions prevail in Illinois beekeeping. A practical apiarist may overcome and entirely destroy disease among his own bees, but there are just enough careless beekeepers within reach to again infest his apiary, so that his efforts are useless. It is our place, as a regular, long organized association, to take such steps as will enable us to control disease entirely.

In the advertising of honey, we neglect the easiest and most practical ways of making our honey known. No product is more in need of advertising, in a judicious manner, than is honey, because no product has undergone a greater modification in the modes of management than honey. Some things have changed but little in 600 years. For instance, they still shoe horses in exactly the same manner as they did 600 years ago. But less than a hundred years ago, even the scientists were almost universally ignorant of the history of the honeybee. Honey was robbed from the hives, either by killing the bees or by breaking open the box or the log that enclosed them. Now we have most modern ways, with excellent products. But the average consumer does not even know that there are as many different kinds of honey, as there are different blossoms, and that honey may be pure and yet be water white, or nearly as dark as molasses; neither does he know why we now produce honey in such fine straight combs in little wooden sections. He suspects this comb of being actually manufactured out of paraffine and filled afterwards with glucose, and, in consequence, he mistrusts the most delicious of all sweets. Many people know so little about extracted honey, of which they have vaguely heard, that they even call it "extract of honey." We would sell a hundred pounds of honey where we sell one pound, if the people who can consume it are shown what it really is. This may be done most satisfactorily by exhibitions. Once or twice honey has been extracted, before the public, at our State Fair, with good results. But this must be continued. We need a bee and honey building where constant exhibit of honey production and full explanations will enlighten the visitor. No country produces more honey than we do, but few states are more backward in trying to inform the public than Illinois is.

Many bright and intelligent beekeepers hold that honey will never sell in large quantities, that it will never be a staple. They forget that we live in a country that consumes over 80 pounds of sweets per head, annually, in fact, in the country which consumes the greatest amount of sweets of any in the world. Yet, in this same country, we produce and consume less than 2 pounds per head of the purest and best of all sweets, just because it is not at all times on the market and because the average consumer has very little knowledge of honey and of its production and high quality. The result is that corn syrup, an inferior sweet, manufactured with injurious chemicals, sells twenty times more readily and more plentifully than honey.

There is another point upon which we should indicate our desire to help progress. It is in the matter of cooperation with other states, concerning the control of diseases, by inter-state regulations; the general advertising of honey as other sweets are advertised which are very inferior to it; mutual exchange of ideas and consultation concerning the extent of the crop and the probable prices to be obtained. In this last requirement, I hardly think many know, as well as I have been able to ascertain, the great need there is of information. We all know about the daily prices of wheat, corn, eggs, butter; but how many of our apiarists are informed as to the price they should expect to get for their honey. The average beekeeper, unless he is a very large producer, takes a load of honey to the city, without knowing whether he can get 10 or 30 cents per pound for his product. The result is that he usually sells it at whatever price the grocer offers him. Only a few producers establish a stable price, both for wholesale and retail, and consistently continue to sell at that price. In our own case, we could name a half dozen beekeepers, who with only a few hundred pounds of honey to sell, regularly wait until our established prices are known by the average retailer, and deliberately sell theirs at a few cents less per pound, so as to be able to get rid of their product promptly. These are matters which hold the business of beekeeping below its normal status.

What then, do we need?

We need not only to be members of this association and read its annual reports, we also need to attend the meetings, give our open support to its officers and help push the wheel out of the rut.

We need to join in applying to the Legislature for greater appropriations, to help educate the uninterested producer who neglects his apiary and makes it a menace to others. This may be both an inspection and field work.

We need to spread a greater amount of information on beekeeping, by more regular addresses at Farmers Institutes, by practical and extended courses in beekeeping to our young scientific farmers, at the universities, so they may go home with a sufficient knowledge of the honey bee to care for her.

We need to apply for a special building at the State Fair grounds; which building may be used both for entomology or the study of injurious insects, and the exhibit of all products and harvesting methods of beekeeping; showing plainly that this insect, the only insect directly producing a beneficial crop, in this State, has been misunderstood by the masses, and that honey is not sufficiently appreciated.

We need, above all things, to give our hearty support to the American Honey Producers League, with the expectation that sooner or later, this League will repay us a hundredfold for our investments in it. Of course we must not expect, when we pay ten dollars to support it, to get back a hundred within the next six months. That has been the trouble with most of our associations; we wish to get too much, and get it too promptly, to permanently sustain our associations. A little less selfishness will get better results in the long run. If a well managed national organization helps us to get one cent per pound more for our honey than

we get without it, we will be well repaid, though some of us may not actually realize that we are getting any benefits. Progress has ever been slow, witness how little we have advanced from the wars of savagery.

It is not necessary for me to expatiate any farther upon the benefits that will be derived from a concerted action of Illinois beekeepers. I was one of the charter members of this association. I remember the time when it was difficult to bring together more than a half a dozen men, so I am not impatient of results. But I do hope that, though I am past three score and ten, I may yet live to see our Illinois State Beekeepers' Association one of the best in the land of progress. (Applause.)

THE PRESIDENT.—The paper is open for discussion.

MR. KILDOW.—There is nothing much to say—it is too good. I would like to impress on our beekeeper friends, that they take that to heart. It is well worth it.

THE FOULBROOD BILL.

MR. E. J. BAXTER.—I think there is a great deal to discuss in that paper, especially that foulbrood question, for the inspector that is a very

There are still too many log hives like this one in Illinois. Log hives are not producers and they are likely to harbor disease.

momentous question. There are a great many present who ought to consider it very thoroughly, to see what they can do to improve it.

This Inspection Law was passed by our Legislature in 1911. If you remember, this State society had been trying for six years previous to get this Inspection Law on the statute books, but failed, and it is only by mere chance that it passed in 1911.

During 1917-18 I was in Utah and all through the west. I passed the winter of 1918-19 at Salt Lake City, and a foulbrood bill was introduced in the legislature there, and it was passed. In that bill they appoint a State Inspector of Apiaries, and that law also requires each county to appoint an Inspector of Apiaries. The State Inspector visits all these County Inspectors during the year and checks up their work first, what they have been doing, and the result is that within the last two years they have stamped out foulbrood to a great extent.

When I visited the Uintah Basin, one of the greatest beekeeping locations I have ever been in, where they count their crops from three to five sixty-pound cans to the hive surplus, they had lots of foulbrood, but I understand that it is practically cleaned up now. They are not permitted to keep any bees in gums. They must be movable-frame hives; not only movable-frame hives, but the combs must be so one can take them out and inspect them.

They have the same kind of a law in Idaho. I think we ought to try to have our bill remodeled so as to make it more efficient. Illinois is a great honey-producing State. Of course, we have dry years when the crop is short. In the west, where they irrigate, they never know what a failure is. Nevertheless, we could produce fifty times more honey in this State if we would go at it right and try to make the most of our resources.

That is why I think this paper ought to be considered very carefully and we ought to do something. We ought to have a Committee on Legislation appointed for the next term of the Legislature.

MR. BENDER.—I think the idea of appointing a County Inspector for each county is an excellent one, where a competent man can be found for that county, but it might take more money than we have to carry it out, if we appointed that many inspectors.

MR. KILDOW.—I have been very anxious and very much interested to see what could be done further for the beekeepers of this State. I think in many localities there is a feeling the State is doing hardly anything. It is not connected up right. Dr. Baxter mentioned that in his address; we need organizations in the counties, through which the State can function, otherwise the State organization doesn't mean much.

I haven't got to the point of having anything constructive to offer. I so often hear of desperate cases, people are very desperate about the situation, they are up against it, they do not know what to do. So many of those come to my attention that I am anxious that this State make a forward move somehow, to do more for the beekeepers.

SWEET CLOVER.

MR. STONE.—Mr. President, the future of the beekeeper in this State, I think, is going to be great. I was at a lecture yesterday afternoon, given by a man who has been speaking at universities for ten years—and the greatest thing he had to speak about was the advantage of sweet clover, getting more sweet clover. It is the greatest fertilizer for the soil, that grows, and the farmers now are all being taught to raise sweet clover instead of red clover even, because it is a greater

fertilizer. There isn't anything that is equal to sweet clover. My neighbors all around say they didn't have any clover honey this year. Our bees worked all summer—just sounded like a swarm. We had twenty acres of sweet clover pasture, and we didn't plow it up. We sowed it two consecutive springs, so we let it seed every year, and it is a permanent pasture.

That great sweet clover man of Iowa, Coverdale, says that there is no plant equal for forage to sweet clover, and our farmers are finding it out. We have been raising it for 38 years, and we knew it was from the beginning, from what the beekeepers told us about it.

There was a man from Mississippi who sent a letter up, and Mr. Baldridge read it in the Chicago convention, I don't know how many years ago that was. Mr. Dadant's father was there. He told of having 100 acres of sweet clover meadow, and told what good hay it made. We took right hold of that, principally because it was a great honey plant, I suppose, and we have been raising sweet clover ever since.

The neighbors tried to declare it a nuisance, a foul weed, and in the town meeting I took the stand that it was one of the best plants we had, and they almost laughed me out of the meeting. But I was in an agricultural implement store a few years ago, and a young man who was agent for machinery said, "Mr. Stone, I often think about the time they abused you so in the town meeting; those same fellows are coming here to find where they can get sweet clover seed." The time is coming when sweet clover is going to be generally raised to a large extent.

THE PRESIDENT.—Anyone else have anything to say in regard to this paper or the Beekeepers' Association? I heartily agree with what our former President, E. J. Baxter, has said in regard to the foulbrood law.

APPROPRIATIONS.

THE PRESIDENT.—I can't help but feel that the State association, while it has filled, in the time past, a very unique niche in beekeeping, has almost reached the limit running along its present plan. We have got to be bigger, we have got to be better. We must have county organizations. We must have every man that is producing honey, commercially or for just the fun of it, the back lotter, interested in the State association, if we ever expect to get anywhere.

I have appeared three different times before the Committees on Appropriations, and every time they say, what is your membership? Most of them have our report with the membership published, and they sit down and figure out in dollars and cents how much per capita we are getting, and they stop there. I went to the last Legislature and asked for two thousand dollars a year to run this society. I expected to have county organizations and send men into the various counties to give instructions. They just laughed at me. I got $1,200—thought I was lucky to get that. But after a good deal of maneuvering and buttonholing, we did get an appropriation for the State Inspector of Apiaries moved up one thousand dollars.

The Chicago organization of Cook County got behind it and demanded that they have a man, even asked for an automobile to ride around in, so they let us off with three thousand dollars because they didn't know what we would ask for. That shows what a little push and pull by the beekeepers will do. I have gone to the Appropriations Committee a number of times, and outside of about half a dozen men in the State who have always been pushing this—there are some of them—nobody else ever writes a letter, no man in the Legislature from your district has ever had a man from your district say anything to him about it. You know a legislator only does what the people back of him ask for. If you could get a little agitation in your own newspaper about the beekeeping industry, and get some newspaper man all worked up about it, and he writes a great long piece, you know that legislator is going down and see that newspaper editor before a week, to find out exactly what is back of it, because he is afraid of those votes at home. That is the only way you are going to get this thing anywhere. You have got to work, and it isn't going to cost you anything to do it. It will cost you a little effort to talk to the other fellow, to get your newspaper interested, but if you will go to work and line up your newspaper man and take it up with the head of the State society, you will get something for that newspaper if you are not able to write it yourself. We expect you to see that it is put in. Get the newspaper man himself to write it. He can probably write a better story, and you will get somewhere; you will get what the State ought to have, what the beekeeper ought to have. If you don't, you will never get anywhere, you will stay a little society of about three or four hundred people in big years, and in lean years you will run down to about one hundred as you are doing now. Then the State Inspector comes up and asks for something, and they will say, "You don't amount to much, it is only a little bee business and only 100 men in the society. We will give them a few dollars apiece and let it go at that." That is exactly the way they treat you, and it is only by cooperation and united effort that you will ever move. I don't care who your President is or who your Secretary is. They are not the society. You men are the society. Some of the best suggestions we have had as to what should be done have come from some of the small county organizations. They have boosted the game, and the thing to do is to form an organization in every county; get every man in whether he has one hive of bees or a hundred. If he is interested and wants to join, get him in.

Let those counties be component members of the State organization, and if we could have an organization in every one of the counties in the State, think what it would mean! It is appalling when you go out and ask one of these bee papers how many men are taking the paper in the State. Some of them will say, "We have got one thousand people taking the paper in the State." Here we are with a society of 150 to 200. There is something wrong. Of course it is true, as Dadants' paper said, there are a great many men that put in $1.50 or $1.75 in the State association in the spring, where they would like to have $20 in return from that association next fall. That can't be done, but there is one

way to look at it. Suppose you have never had this association, suppose you had never had a State Inspector.

MR. KILDOW.—That is a thing they never look at.

THE PRESIDENT.—I am going to tell you, if this society dies there will be no State Inspector in Illinois. There will be no education in beekeeping, only what you gather up yourself. There will be no law against foulbrood, bringing it into this State—you might as well go out of business.

MR. KILDOW.—There isn't now.

MR. E. J. BAXTER.—That is why we must change it.

THE PRESIDENT.—So it is up to you.

QUESTION.—What is the law about moving bees?

THE PRESIDENT.—There isn't any at the present time.

MR. LOWER.—In the State of Colorado you can't move them.

FOULBROOD.

THE PRESIDENT.—A man can ship bees into the State of Illinois, if he brings them in on a wagon, with all his foulbrood in the wagon, there is nothing to keep him from moving them. They bring him up a little on Interstate Commerce if he ships by freight or mail.

MR. E. J. BAXTER.—Let me say a word there. There is a law in this State preventing you from shipping foulbrood bees from one place to another. There is a clause in the law that says there is a $50 fine for disseminating foulbrood, therefore if you can prove that the man who brought in those bees knew he had foulbrood and brought them in, he is liable for disseminating foulbrood, and is subject to a fine; but it is not strong enough. We want a law that will compel him to have them inspected and bring in a clean bill of health wherever he takes his bees. That is what we want and ought to have. That is the law they have in Utah. You can't take bees a mile without having them inspected and having a clean bill of health, nor can you ship anything from the outside, into Utah. This law is giving results. I must say that in Utah their society was nothing; it consisted of the president and secretary, and I don't believe they had a meeting in a half a dozen years. But they went to work and got the beekeepers interested from one end of the State to the other.

They wrote to the legislators telling them what they wanted, they came to Salt Lake City and interviewed them, and they had to pass it. Besides, they got statistics together. They showed them what Utah was producing and could produce. Not only did they show it in the shape of money, but there are other things, for instance the pollenization of plants, the pollenization of sweet clover, of alfalfa, and of fruits. And Utah is a great alfalfa seed producing State and a grower of fruit. They took that into consideration. There are thousands of acres of sweet clover in Utah. I have seen fields of 160 acres side by side, dozens of them. You find that all through the west. I guess there is more sweet clover honey raised and more alfalfa than anything else.

When you take all these things into consideration and show the legislators what it means to the State, they will not be slow in granting

you what you ask, and that is what we must do here, and the easiest way to do it is to organize in county associations. It is not necessary for the State association to send anybody into that county, if there is any live beeman there, a live wire, he ought to be able to get up an organization and through correspondence with the Secretary of the society or the President, know just what is wanted and push it through. That is the only way to get things—work for it. You can't get anything for nothing, it takes hard work.

In getting all these bills through, there wasn't a cent of money spent in cash, but there was lots of hard work, and that is what we have got to do, and we have got to begin at the bottom with the counties. Get good associations there, get strong associations. I don't see why we can't. We have the beekeepers in the State to do it, we have

Fruit growing combines well with beekeeping, and besides, the bees are necessary to proper fertilization of fruit.

the resources, we have the flora and conditions to produce the honey, all we want to do is go to work.

Mr. Kildow.—That is one thing the Inspectors in the State have been trying to do since we have had the law—trying to get the beekeepers in the different localities in the State interested so they would start local organizations. That one thing we have been pushing all the time since we have had the office, is to talk association to the people, get them together because we know when we get a bunch together they will do more than they do individually. But some of you who have tried that thing know it is uphill business. You are interested, but it is a hard matter to get the other fellow interested sometimes, but it is the thing

we have to come to. I don't say we have to have an organization in every county, because I think that is asking a little too much, but we could get two or three counties together, or if we had a large county we might get an association in that county. The number of different associations getting together and consulting, talking these things up, then coming to our State association as the unit, with that we can do something, we can get the laws we want, we can get a law that we can't move bees—we haven't it now. You can bring all the foulbrood you want into the State, there is no direct law against it.

I tried to get that law last fall, but the Legislature wouldn't incorporate it. I wanted an amendment to have all bees coming into Illinois come in with a certificate of inspection, but I didn't get it. We don't get things every time we want them, even if they are good.

MR. STONE.—Suppose the appropriation was sufficient, is the present law sufficient to get rid of all the foulbrood in the State?

MR. KILDOW.—Yes, if we can get money enough. We got an increase of a thousand dollars, but that won't go any further than it did before. It will use up about the extra money we have appropriated for increased per diem pay of Inspectors. We ought to have a ten-thousand-dollar appropriation in the State of Illinois.

MOVING BEES.

MR. TYLER.—You spoke partly on what I was going to speak on, about an association in every county. My particular county only has about eight or nine men that keep bees. I don't believe a man will get very much of an association in that county, but there are about three counties close together, and we could have a nice collective association.

In regard to moving bees, and not being able to move bees a mile without inspection, I think that would go a little against our neighbors, especially a man running outapiaries and who hadn't any foulbrood, he would have to treat all his foulbrood in the outapiaries, and I have not found that a success. I have had some experience in the last two or three years, and as long as I have tried to treat it in outapiaries I couldn't get any results, but when I got to looking after foulbrood at home and treating it properly in the evening and then giving the shaking treatment at a proper time, I got somewhere. I am running nine apiaries this year, and have had some experience along that line.

MR. WOOLDRIDGE.—Along the lines of what Mr. Kildow just mentioned, I would like to give a little experience that I have had, under his supervision. Last January fifth—during the fall previous we had foulbrood in that section of Jackson County, near Carbondale. He came down there on an inspection trip and during the convention he told us what we should do. He said we should organize, so on the 5th day of January we called a meeting. We had a fair attendance. We called another one a month later, and we had a still larger meeting, and at the present time we are some sixty-odd strong in membership.

During this time we named it the Jackson County Beekeepers' Association, but we found that there were others living near the line that would like to come in. Some thought it was detrimental to keep

them out, so I suggested that it be changed to Southern Illinois Beekeepers' Association, and we could take them in from any part that would feel inclined to join us. We found that was satisfactory, and while we have had some experience down there with foulbrood, quite a lot of it, we have also an inspector down there, and those people are hungry for advice. They are willing to do almost anything to get out of their trouble.

I don't believe it would be advisable to confine it to the county, because sometimes our headquarters are located too near the county line; we could get people right over the line that would be eligible for membership, that perhaps would feel as though they had no right there. So I wouldn't suggest a county, but I would say let the associations be thick enough so everybody could be in attendance distance. Then affiliate ourselves with the State association, then when appropriations came up we would be greater in number. Neither am I in favor of confining the membership to those who have one colony or more. Every-

Group of Beekeepers at a field meet at Putnam, Ill.

body who is interested in bee-culture should have the right to become a member of our association, so long as he pays his dues. The greater the number, the bigger we will look in Springfield when we are after money. We can't do anything without that appropriation.

MR. WITHROW.—Mr. President, I think the main drawback in this association or any other, is a lack of cooperation. No reason why, if a man belongs to this association, he shouldn't go out and get another, his neighbor or somebody. I don't know why they don't unless it is jealousy.

Last spring we sent out some letters asking the membership to interview their Senators and Representatives. Dr. Baxter told me at the time, "You better put in a list of all the Representatives and Senators in the State." I said, "Everybody knows who the Senators and Representatives are." Sure. But there are a lot of them, I found out later, that didn't know who they voted for. It appears very peculiar to me that a man would vote for a fellow and not know who he voted for.

Local Associations.

Mr. Bender.—About this matter of county associations, it is rather uphill work for one reason: The most extensive beekeepers in every county are least interested in a county association. I know at least two cases where the principal beekeeper made it his business to choke the county association to death instead of helping, because he said he didn't want to start a lot of competitors.

Mr. Kildow.—I would like to raise the question how these local associations can link up with the State association.

The President.—You will have to link up possibly in the way of some of the other county associations already formed. They come in under the same rule as the Chicago Northwestern. They are affiliated bodies.

Mr. E. J. Baxter.—The local fee is paid to the local association, then the State society gets a certain per cent of it?

The President.—Fifty cents.

Mr. Kildow.—One State I know of has their State association managed by a board of managers, and that board of managers is composed of a representative from each local association, that is if they come up to certain requirements, and then they feel they are a part of that.

The President.—That possibly can be worked out after we form the county associations.

Mr. Kildow.—Then if the State or State University is doing anything and it is possible for them to go out into these local and county associations and put on some kind of an educational meeting, the association will feel it is worth while for it to be linked up with the State, it will be getting strong and confident, and that will work for good

Bees Stinging.

The President.—Have you any questions, Mr. King?

Mr. King.—Why do bees sting some people and not others?

Mr. Bender.—I never could be perfectly sure that they were any different. If bees would sting me, I could never be sure that they made the slightest distinction except on account of the action. I think if any man would go in an apiary and do exactly what I do, they wouldn't sting him any worse than they do me.

Mr. E. J. Baxter.—A difference in color will make a difference. Black they will sting while lighter colors they will not.

Mr. Bender.—I know some men who never get a sting. I know a man who took more stings in a day than I got in a long time, and paid no attention to them. Our methods are different, yet he is just as good a beeman as I am.

Mr. Withrow.—I would like to ask Mr. Bender, did that fellow have rheumatism?

Mr. Bender.—No, I never knew him to have rheumatism.

Mr. Stone.—I asked that question because I wanted to know. There is a reason. It isn't just because a man does a certain way that

he gets stung and other times does a certain way and doesn't get stung. I never had a bee sting me in the middle of the hand. I believe some people's skins are tougher than others, and I don't believe a bee can sting them. I have had bees light on the back of the hand, where there was no hair, and they would curl up, and I knew they were trying to put their sting in, but if they did get hold of a hair they would put their sting in. I don't believe the weight of a bee will put a sting in your flesh.

THE PRESIDENT.—I believe it can.

MR. KILDOW.—I believe there is a little difference. I have seen people away off from the beeyard get stung, without any provocation at all, probably a block or two away from the beeyard, but there is a scent in some people that the bee will resent the minute they get close to them they will sting them, while others will go around bees and they are not bothered. I think there is something in it.

MR. E. J. BAXTER.—I don't believe it is scent, I believe it is the condition of the person. If a person is nervous he is almost sure to get stung, while a man not afraid of them goes right among them. I can handle most any hive without gloves, veil, or anything else. I never wear gloves; I do get stings, but let anyone else come in without a veil and gloves, they would soon be run out of the yard.

MR. KILDOW.—I have to disagree with Neighbor Baxter, because a man ten or twelve rods from bees, his nervousness isn't showing in that yard, and I don't think it has any effect on the bees. Apparently a good many times there does seem to be a scent that is objectionable to the bee. We wouldn't probably notice the scent, but a bee will.

MR. BAXTER.—You have to have good nerves.

MR. STEWART.—Mr. Baxter, when you are sweaty and full of dirt as a working man can be on a hot day, they will sting you. Take a bath and put on clean clothes, do the bees bother you so much.

MR. BAXTER.—Every bit.

MR. BENDER.—As far as the distance from the hive is concerned, I think perhaps I could break the record on that. Last summer I was driving east from town, at least a mile and a half from any beehive, and a bee lit on my face and stung me. I didn't have time to be afraid.

THE PRESIDENT.—Let us proceed with the next question.

PURE ITALIANS.

MR. KING.—Does it pay a honey producer to try to keep a pure Italian stock?

MR. E. J. BAXTER.—Mr. President, I say most assuredly. I have had all different kinds of races of bees within my experience, and I have got down to the pure Italian, as pure as I can get them. I don't look for color, I don't consider that a characteristic of the race, but you want docility and you want them to be very prolific, then you are all right, but above all things get rid of your black bees. I go to work at my hives in the fall when I am taking supers off, and get them ready for winter. If there is a black colony, I know it has to be fed before I look inside. Here is a pure Italian, docile, strong, and I know without look-

ing inside that they have plenty of honey. In poor years you will find that invariably the case. A pure Italian will produce honey when the black will starve to death. The past year has been next to the poorest season in my forty-five years, and yet although I fed lots and lots of honey, my pure Italians as a rule I didn't have to feed this fall.

THE PRESIDENT.—Proceed with the next question.

BEEKEEPING AND FOULBROOD.

MR. KING.—Does beekeeping ever pay where foulbrood is present?

MR. DADANT.—I would say yes. It would be pretty difficult in this day and age to have beekeeping pay anywhere if we had to have it non-paying wherever foulbrood was present. If the question is changed to does beekeeping pay where foulbrood is not checked but is allowed to go rampant, I would say it doesn't pay, but the careful beekeeper can fight foulbrood continually year after year, and still have his bees on a paying basis.

MR. E. J. BAXTER.—I had bees 45 years ago. Six years ago I got a foulbrood scare, I had never had foulbrood in my yards. I learned that there was a young man about a mile east of me, that had a colony of foulbrood. We inspected it and we found foulbrood. Mr. Kildow told him what to do according to the State law. He went to work and took the combs of this diseased brood out of the hive, made a big pile of it and stuck it up in the fork of a tree. I happened to notice it. I telegraphed Mr. Kildow to come right away. We went there and burned up every hive he had on the place, and we told him about this $50 fine. I watched my bees carefully to see that I didn't get any foulbrood. If I had, I would have prosecuted him sure, because that was disseminating foulbrood. My bees didn't take it. One of my neighbors took it, and he killed every bee he had on the place, and it has been the last of it in that section. There has been a good deal of foulbrood in Hancock County, within ten or twelve miles of me, but it has never come up where I am, to my knowledge. I should feel very bad if anyone having foulbrood should bring it into my locality, and I would certainly prosecute them under this clause of the law on disseminating foulbrood. If we had this certificate business they couldn't do it. The inspection would have to take place before the bees were moved, and they would have to be declared free from foulbrood, but in this other case there would only be a fine after the thing had been done. That is why it would be a great deal better to prevent it beforehand than to get damages afterward.

FELT CLOTH FOR PACKING.

MR. KING.—Who has had experience with hair felt cloth for packing bees, what is their experience with same?

MR. BENDER.—In the old countries it used to be the rule to do that, it used to be the way they would pack bees in winter. They never wintered in cellars, but packed them outside. Of course the hives are different from our hives, but if beekeepers knew anything at all about

taking care of their bees, they always looked for material to put over them in the winter time, on top of them and next to the frames.

MR. E. J. BAXTER.—I don't know just the quality of this cloth, if it is impervious to air and moisture I would say no. Since 1883 Ernest Root claimed the bees must be hermetically sealed and never remove the cloth on top. He thinks differently now. I have been using Mr. Dadant's methods. When you are examining your bees any time in the winter, you will find them dry and snug, while if you leave the cloth on top or anything that excludes the moisture and air from rising, in cold weather you will find sheets of ice on the combs and your bees will starve to death with a whole hive of honey. You want ventilation. In ventilating my bees the entrance is wide open, and in the cap in the north end—the bees always face south—I have an auger hole of about an inch, closed with a wire screen, so that the moisture escapes. Sometimes when I unpack my bees in the spring, where I had omitted this escape I find the leaves as wet as can be. That shows there must be some means of escape for the moisture, because they give off a great deal of moisture during winter. If the cloth prevents that, I would say no. It may be all right around the sides, but, be careful to have plenty of ventilation.

MR. DADANT.—I think the questioner had in mind a cloth something like the old felt boot which is a cloth that will take up moisture, that isn't impervious to it. They make some of those like the fibrofelt and some of those materials advertised a year or two ago. I think they would be all right, because they do let the moisture through, they are not impervious.

TIME TO PACK FOR WINTER.

MR. KING.—What time in the fall is the best to pack the bees for outside wintering?

MR. KILDOW.—Just as soon as it is cool enough so you can get around the hive without having the bees out after you, the sooner the better, I think.

MR. STONE.—I believe bees that haven't been packed at all are just as well off now as the ones that have been packed year after year.

MR. BENDER.—I claim if you pack them too early they will raise brood later than they ought to.

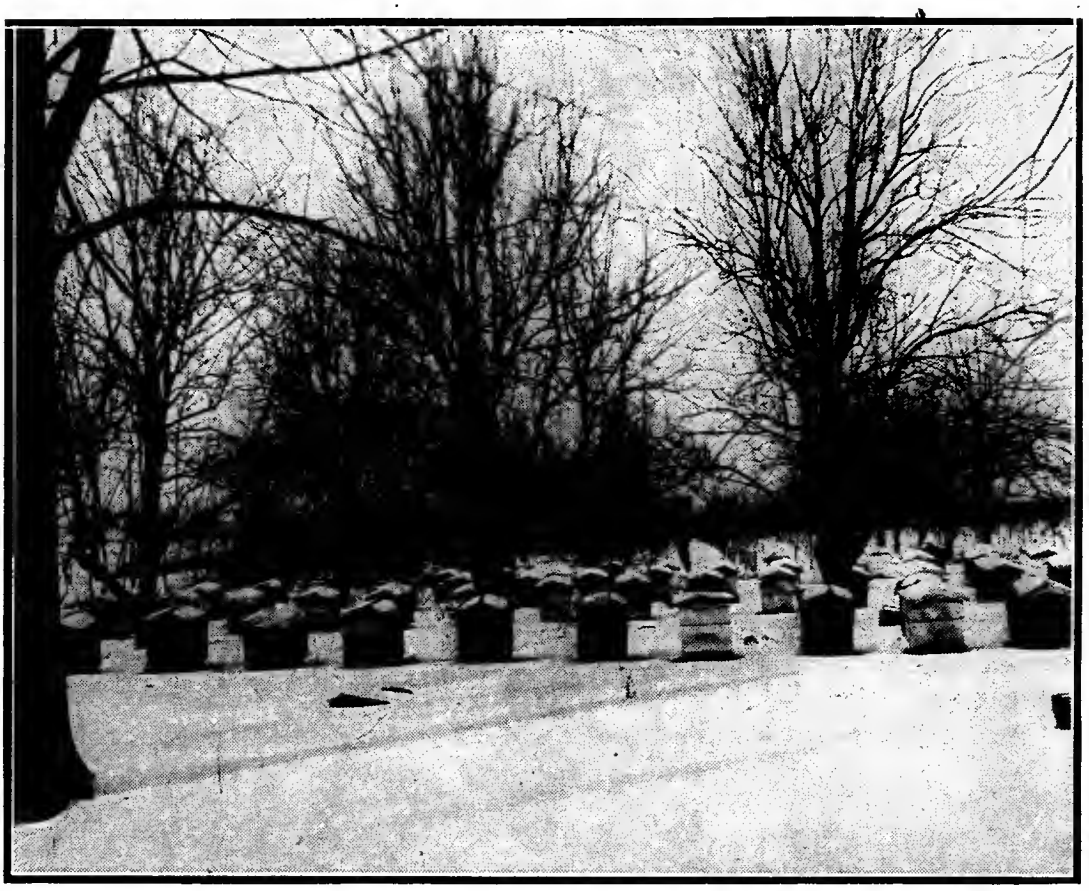
MR. DADANT.—If you pack them after they have once formed a winter cluster and disturb them any, you are apt to start brood rearing. My opinion would be the best time to pack them is after you have made your last examination, so that they will need to be disturbed no more, and before the first cold spell, that will require winter clustering. I don't know when that is going to be. With us we pack them as quick as we can get the material. We use leaves. In fact, we haven't some of ours packed yet.

THE PRESIDENT.—The average beekeeper packs his bees too late, and he also packs them whenever he can. I have tried it late and I have tried it early. I packed one year very early and all my bees started

broodrearing, the ones I packed much later after there had been a cold spell, I didn't have any trouble with. I used the same method of packing, that the Dadant people use.

MR. E. J. BAXTER.—I say pack early.

MR. KILDOW.—If you pack early, bees cluster in the entrance and if it comes on a cold spell they are where you ought to have them, with all the honey back of them. If you pack early their honey is above them



Double wall chaff packed hives wintered out of doors in the apiary of E. J. Baxter at Nauvoo.

and it takes a long cool spell to kill them. This season is rather warm. I don't know how that is going to act, they may start broodrearing, I don't know.

THE PRESIDENT.—Proceed with the next question.

ELECTRICITY TO REPLACE PACKING.

MR. KING.—Who has used electricity for heating hives (taking the place of all other packing), what success have you had?

THE PRESIDENT.—I will ask Mr. Dadant to answer that question.

MR. DADANT.—I haven't had any experience. It would be pretty expensive, I think.

MR WOOLDRIDGE.—I asked that question for the reason I have tried it already two years. If nothing happens the Cook County people will have an opportunity to see it in operation, if it gets cold enough later

on. I am going to invite them to come out to see it. I find it the cheapest. We all know the packing proposition is a serious one for the reason it is expensive, takes lots of work, and it is difficult to tell when is just the right time to do the packing. I have tried an experiment in fixing a coil that makes about the right kind of heat, that does not melt the frames, and the bees recognize where the heat is. In cold weather they will work over to this heat unit. Then after they have worked themselves over there I may put it in the farthest part of the hive again, and they will again move, showing they recognize where the heat is.

Some would say it is too expensive. It is the most economical way I have ever found, I think all of you will agree the first cost is about all the cost there is to it. An electric globe that will use 60 watts will heat 26 hives, so the bees are not clustered so tightly but what they can move around. In addition to that they start about two or three weeks earlier in brood raising in the spring. We realize most of us get consumers in the place of producers, when the white clover comes. That is one advantage that we have.

I place the thermometer where most of the family pass in at the kitchen door. When we see it down to a certain point we realize it is going to get cold. If the switch isn't on we put it on. In that way we have a constant heat and at a very little cost. It is very little expense after the first cost, and that apparatus can be put on the market for $5 or less per colony, then you haven't very much expense afterward. Some one has raised the objection that we are not near power current, but it is easier to put your colonies on a truck and truck them to a current than it is to go out and buy these quadruple packing boxes and take care of the packing or get new packing every year, so I would like for this association to investigate some way of getting away from the expense of the winter packing. Why do you pack? It is so much more trouble, it seems to me you people who are decidedly interested in bee culture ought to get busy and fathom out something that we can pack those bees with, with the least trouble, and get the beginner interested in it.

Mr. Lower.—The question of packing is so interesting I can hardly keep still. I have read bee culture since I was a boy in regard to packing hives, etc. In Colorado ours are always packed when we take the honey off. We use an inner cover, one-fourth inch thick, which covers the hive completely over the frame and has a slot one inch long and three inches wide. With some of the bees we use a metal cover. We leave them that way all winter. The warm air from the bees is escaping from the opening, and we never think about putting anything over them. I am a new beekeeper, only been in business about five years, but no beekeeper ever thinks of putting any packing in they just simply leave plenty of honey below.

Keep the bees dry, that is the main thing. It might not be out of the way to state we never disturb the honey below. We leave that full, and in the ordinary standard hive it is sufficient to last them through the winter. Just the minute we take the upper supers all off and put the inner cover and outer cover on, we put a brick or stone on top, and the

bees are packed. We use a standard frame, put out by the Lewis people at Watertown, Wisconsin, a standard size frame.

MR. E. J. BAXTER.—This electric process is interesting because it is a new one to me, and if I were a young man it would be worth ten times the cost of coming here, just to have heard that. I would go right back west and go into beekeeping in Utah, Idaho, even California, they have got to have packing. Their bees are suffering from cold spells during brood-rearing and the brood is killed, but with that electric process, it would be an easy matter to protect them when they needed protection and the result is the bees would be strong, healthy, and would be ready for the orange flow and for the other flows that come. They are beginning to pack now in California, and in parts of Utah; they lose hundreds and thousands of colonies in the winter time by not packing. I have the Dadant-Quinby hive, ten-frames. Of course I have no foulbrood, remember that. I have ten frames and a division-board. As soon as I take off my honey, about the last week in September, I go through the brood nest. I examine every frame and see that they have just what honey they ought to have and according to the strength of the hive I leave from eight down to six frames. The others I take out and move the division-board over. These frames I take out I store away in the honey house, giving them back in the spring. Then my bees are ready to pack the last week in September. Just as soon as the first leaves drop and are thoroughly dried, I gather them up and go to packing. I fill this empty space with leaves. It will make my brood-nest much smaller, they will have less space to keep warm, and when spring comes they can breed up faster and when I unpack I expand and give them frames, if they need them, so that they can build up fast. I find a great advantage in doing so, and as far as this outer covering is concerned, I do not need that because my hives are all double-walled hives with a dead-air space between, which is a protection from heat and cold. With this packing inside my bees are ready to winter in the very coldest weather. I have contended for forty years that bees do not freeze to death if they are dry.

MR. STONE.—How about it if it stays so cool they can't get to the honey for a week?

MR. E. J. BAXTER.—They can get to the honey any time, if you pack them right, but if not packed right it is quite the reverse. During the winter of 1884 and 5—some of you remember what kind of weather we had—I had one apiary packed. I was foolish enough to teach school that winter again. The result was I had two apiaries not packed, they didn't even have a cloth on top, and they were chilled. I examined some of those hives in the winter time, and there was a quarter of an inch of ice right up and down every comb. Out of 65 colonies I had 12 left in the spring, in each apiary. Where I had them well packed I didn't lose over 5 per cent. Conclusion, keep the bees dry. They didn't fly that winter for six weeks at a time. The cold began early in December, and there was a thaw about the twelfth of January. Then we had snow and it froze up and was cold till March 30th, below zero. Hardly a day passed but what it was below zero, yet those well packed bees came out all right.

WEDNESDAY AFTERNOON SESSION.

THE PRESIDENT.—The first paper on the program this afternoon is "The Value of Sweet Clover," by N. A. Weston, of Urbana.

THE VALUE OF SWEET CLOVER IN FARM ECONOMY.

(By N. A. Weston.)

PREFATORY NOTE.—In the preparation of this paper, very free use has been made of numerous bulletins published by the United States Department of Agriculture and by the Agricultural Experiment Stations of the different States, especially those of Illinois and Ohio, and also of many articles and editorial comments in the agricultural journals. Full acknowledgment is here made for the use of these materials.

The cultivation of sweet clover on the farms of the United States is, relatively speaking, a very new thing. Within the memory of many men now living sweet clover was commonly regarded as a noxious weed whose destruction was, in many places, the object of severely stringent laws. As a wild plant it has, for a long time, been rather widely distributed in the United States, growing as a usual thing in waste places and in uncultivated fields.

Sweet clover is a member of the large family of plants now commonly called legumes, but formerly more generally known as the pulse family. This order of plants includes the clovers, beans, peas, and indigo plants, and the locusts among the trees, each of which constitutes a distinct genus or sub-family. The name "Sweet Clover" is really a misnomer, as the plant belongs to a genus quite distinct from the clovers. It is also different from the alfalfas, another genus which it resembles, but as a member of the same great family of plants it is closely related to both the clovers and the alfalfas.

Three different species or varieties of sweet clover have long been recognized. These are the white biennial, the yellow biennial, and the yellow annual varieties. The white biennial is the most widely distributed and the best known, but there seem now to be several distinct strains of it, although they are not so conspicuous as the different strains of red clover. In the summer of 1916 fields of an exceptional early blooming strain were found in Illinois, Iowa, and North Dakota. The most conspicuous difference between these plants and those of the ordinary white sweet clover was the fact that they were in bloom during the first week of June, about three weeks earlier than the ordinary variety should bloom in these localities. An annual white-flowered sweet clover was found growing in several different places in the fall of 1916. Mr. H. S. Coe, agronomist of the United States Department of Agriculture, says that the seed from which these plants were produced was grown in Alabama. It resembles the common white sweet clover in most respects, but is strictly annual instead of biennial. It has not yet been determined whether this is a distinct species or merely an annual strain of the common white biennial species. This is the annual white sweet clover, the discovery of which has been credited to Professor H. D. Hughes of the Iowa State College of Agriculture and which has recently been given the name of Hubam.

The original home of sweet clover is supposed to have been in Bokhara in central Asia, and the plant is sometimes called Bokhara clover. It has been common throughout Europe for many centuries. It was known to the ancients and was highly prized by Greek and Roman beekeepers. Sweet clover was the honey-lotus of the Greeks. It now grows in practically every country in the world.

So far as is known sweet clover was not a native of America but was introduced from Europe, though nothing definite is known of the time or method of its introduction. Its wide distribution seems to indicate that it was accidentally introduced in many places in colonial times. Probably the first scientific mention of it in the United States is in a book on the flora of Virginia published in 1739. The spread of this plant in the United States has been very rapid in the last fifty or sixty years and especially since it has come to have a recognized commercial value. The production and sale of sweet clover seed became quite an important industry in the sweet clover district of Alabama before 1880. At that time commercial distribution of the seed began in the South and to some extent in the North, although widespread commercial distribution in the North is of much more recent date. Sweet clover is, however, widely spread and is found in every district of the United States from Maine to Washington. It has followed the great trunk lines of the railways across the continent and has spread out along improved highways where it has probably been carried in road materials, while along unimproved roads it has been distributed by the mud on wagon wheels. Some of the railroads have grown sweet clover along their right of ways as a means of protecting and retaining embankments. Apiarists in different sections of the country have also had a share in the distribution of sweet clover as it has always been highly esteemed as a honey producing plant. There is more than one place that has a tradition that some "bee man" scattered seed along the highways.

It is not possible to make a definite statement about either the distribution or cultivation of sweet clover in the United States. There are no complete government or other statistics on the matter. An investigation in Ohio in 1912 showed that sweet clover was then growing in every county in the State either along roadsides, in cultivated fields, or in pastures. At that time it was variously regarded by farmers. Some looked on it as a pest, while others considered it very valuable for pasturage and hay and as a green manure. At the present time the United States Department of Agriculture issues no reports or statistics relating to sweet clover production as it does in the case of the principal farm crops. But in recent years it has been grown rather extensively as a field crop in the limestone regions of Alabama, Mississippi, and Kentucky, in northern Illinois, and throughout the western north-central and mountain states. There are, in fact, only a few of the states in the east and south where sweet clover is not grown as a cultivated crop. In 1917 one of the bureaus of the United States Department of Agriculture published a map to illustrate the distribution of sweet clover cultivation by indicating the counties of the country

in which 50 acres or more was being grown in cultivated fields. This map has been reproduced on a somewhat larger scale and shows clearly the extent of the cultivation of sweet clover and its concentration in certain localities.

In the study for which this map was prepared it was shown that the acreage of sweet clover in northern Illinois was at that time greater than in any of the other eastern north-central states, while the other regions with large acreage were the western north-central and mountain states and the limestone regions of the South. The progress of sweet clover cultivation since 1917 has undoubtedly been very great, although we have no means of measuring it statistically.

As its distribution over the country suggests, sweet clover is adapted to a very wide range of climatic conditions, and probably may be successfully grown in every state in the Union. In this respect it is superior to the true clovers and probably also to alfalfa. Neither the high temperatures of the South nor the hard winters of the North severely affect the plants, provided sufficient moisture is present in the soil. Sweet clover thrives in the humid districts of the country as well as in the semi-arid regions where the rainfall is insufficient for normal crops of red clover and timothy. In some of the semi-arid regions of the West sweet clover has proved more resistant to drought than alfalfa.

The adaptation to soil conditions is also of very wide range except that it does not thrive in acid soils and in soils which are not inoculated with the bacteria essential to its life processes. It has been grown on all the principal soil types of the United States where the soils have been non-acid and well inoculated. It has grown luxuriantly on soils rich in lime in many parts of the country where the lack of nitrogen and humus has caused farms to be abandoned. Sweet clover thrives well on heavy clay soils and steep embankments where little else will grow. But of course like many other plants it makes its best growth on fertile soils rich in lime. The scarcity of sweet clover in the New England and eastern states as indicated in the map is largely a question of acid soils. It will be noted also that the southern half of Illinois has practically no sweet clover culture in 1917. The late Dr. C. G. Hopkins, noted agronomist of the Illinois Agricultural Experiment Station, in reporting on the status of sweet clover in Illinois in 1911, said, "Sweet clover grows along the highways and railroad right of ways to a very considerable extent in central and northern Illinois. In southern Illinois, where the soils are almost invariably strongly acid, sweet clover is rarely found except where road cuts have brought subsoil containing limestone to the surface, or where limestone may have been used for railroad ballast or for road making."

As was stated at the beginning of this paper the cultivation of sweet clover is a relatively new thing in farm economy. A study of the agricultural literature of 25 or 30 years ago yields very little information concerning it. Slight attention is paid to it in the publications of the experiment stations, which were then rapidly extending their scientific investigations, and in the agricultural journals it is more often referred to as a troublesome weed to be exterminated than as a useful plant on the farm. A generation ago no man would have believed that

the sweet clover plant which grew so luxuriantly in the hard clay of roadside ditches would some day be transplanted to similar situations in the fields and be lifted out of the class of weeds and become one of the most useful and beneficial plants.

The value of sweet clover in the economy of the farm has been only gradually realized, and largely also, it may be said, as a result of many happy accidents. One of these occurred in what is now the great sweet clover region of central northern Kentucky. The story has been told many times, but its unusual economic significance, as well as its romantic character, will justify briefly telling it again.

This sweet clover region of Kentucky comprises some seven or eight counties lying just south of the Ohio River and extending 40 or 50 miles southwest from Cincinnati and includes a part of the famous tobacco growing district of northern Kentucky. In general, the region is a broken one with many steep hills and a soil full of broken limestone fragments. Tobacco has been the staple crop of the region for more than a hundred years. Cultivation has been largely by tenant farmers on a share system. The plan was to cultivate the land for a time with a rotation of tobacco and wheat, grass being sown occasionally with the wheat, then to allow it to go wild for a period of years, and then to clear it again and repeat the process. The consequence of such a system, as will be readily appreciated, made the whole region a scene of desolation.

About 30 years ago sweet clover was introduced into this region by accident, and a man who liked and kept bees was responsible for it. He was a typical "hill-billy" farmer of the region, who planted a few acres of tobacco each year and then gave it scant attention during the growing season, but spent much of his time fishing and hunting for bee trees in the woods. Once when visiting a neighbor, he observed the bees were very fond of certain flowers growing in the garden. He secured some of the seed and sowed it in his own garden and then, as rapidly as possible, seeded his whole farm. The sweet clover thrived and spread and furnished a valuable bee pasturage. But the people of the neighborhood became alarmed and believed the weed would take the entire country. One spring our bee-man farmer plowed a field that had been growing sweet clover for several years and planted it with tobacco. While the cultivation of this tobacco was neglected, as usual, the field produced the heaviest crop in the neighborhood, much to the astonishment of everybody. The crops of the second and third years were equally as good. Not only was the yield heavier than in neighboring fields, but tobacco buyers said the color and quality were also better. The people of the neighborhood pronounced it all a piece of "luck," but the bee-man farmer thought the sweet clover had much to do with it. The farm on which this happened is now one of the jewels of the district.

The fame of the sweet clover soon spread over the northern Kentucky counties, where it has been introduced on hundreds of farms as a fertilizer for tobacco in a rotation consisting of tobacco, of wheat, and then, for several years, of sweet clover. This rotation has proved a great improvement over the earlier practice, and probably the greatest good

that has come from sweet clover in northern Kentucky is in the restoration of worn-out land.

It has also been discovered accidentally that sweet clover is valuable as a pasture and as a hay crop. Live stock has usually accepted it in the first place because other grasses were not available, but having once become accustomed to it all kinds of stock seem to relish it and often eat it greedily. Some of the fine Kentucky stock that in former times was raised on the famous bluegrass pastures is now produced on sweet clover pastures.

It was these accidental discoveries of the value of sweet clover in practical farming that led to a widespread study of its characteristics and to experimentation with its uses both by scientific agriculturists and by practical farmers. As a result of this study and experimentation, the advantages of sweet clover are now generally well understood, and its cultivation is being rapidly extended. As these investigations have demonstrated, its value consists primarily in its use as a fertilizer, or a crop for soil improvement, and in its use as a hay or ensilage crop and as as pasture. In further discussion of the importance of these uses of sweet clover, attention will be confined principally to the corn belt region and particularly Illinois.

Sweet clover is now grown successfully on many farms in the corn belt, both in rotation with other crops and as a catch crop to be plowed under. One of the most serious difficulties which the agriculturists of this region must meet is that of cheaply restoring humus and nitrogen to the soils used in the production of the principal farm crops. It is believed by some that, in the course of time, sweet clover will entirely revolutionize the rotation system of the corn belt. It can be introduced in any of the rotations in common use in much the same way as red clover and aslike clover. Success depends, however, on careful attention to the essential conditions of its growth. There are three of these essentials. They are: (1) lime in the soil, (2) inoculation of the soil or seed, and (3) the scarification of the seed. Lime is the most urgent requirement, and in many sections of the corn belt it is unwise to attempt its cultivation without liming the soil. It will do well in limestone sections and wherever alfalfa thrives. Inoculation is necessary where soils do not have the required bacteria, and scarified seed will give the best stand, though seed that has not been produced in a dry climate will sometimes grow well without the scarifying process.

Sown between two main crops, without occupying the land during any full crop season, sweet clover makes a better crop for plowing under than any other legume in the corn belt region. When sown with oats in the spring or on winter wheat or rye in March or April, it will grow with great vigor after the grain is harvested and may be plowed under either in the fall or the following spring. If well turned under in the fall it will not prove troublesome as a weed in the growing crop of the succeeding spring. Plowing under in the spring of the second year is not so easily managed, because it must be left until late, usually early in May, in order to secure as large a growth as possible. But at this time, other work demands the attention of the farmer, and dry weather and

the heavy growth of roots often make the plowing difficult. As to the value of sweet clover as a fertilizer when used in this way, there can be no doubt. Dr. Hopkins has emphasized the fact that 6.4 tons of dry sweet clover matter furnish as much humus-forming material and as much nitrogen as would be furnished by 25 tons of average farm manure.

A recent investigation by the Illinois Agricultural Experiment Station, the results of which were published in a bulletin[1] in May, 1921, has shown more clearly than any previous study the value of sweet clover as a means of providing nitrogen in appropriate form in soils used in growing corn. This study was made on the University north farm at Urbana in Champaign County, and on the experimental farms in Woodford, Crawford, Cumberland, and Jasper counties. The method employed in the investigations was that of determining periodically during the growing season, the amount of appropriable nitrogen in the soil of a series of plots that had been subjected to different treatments with manure, limestone, rock phosphate, potassium, and sweet clover. The results obtained on the farm at Urbana in 1918 showed that the number of pounds of nitrogen per acre, in two million pounds of surface soil per acre, was largest, with one exception, in the case of the plots on which sweet clover had been grown and turned under, at practically every weekly test during the principal part of the growing season of the corn from the 10th of June to the 12th of July. The exceptional plot was one treated with 80 tons, field weight, of manure, which was five times the amount usually applied, and also with five times the usual amount of rock phosphate. Each weekly test showed a larger nitrogen content in the case of this plot. The apparent utilization of nitrogen by the growing crop on all plots was largest in the seven days from June 24th to July 2nd. This utilization was higher on one of the sweet clover plots than on the highly manured plot, while the rest of the sweet clover plots showed a higher utilization than any of the remaining ones.

It is the conclusion of the investigators in this experiment that sweet clover offers the best solution of the problem of supplying a cheap source of nitrogen for farm crops. With the exception of manure, the animal sources of nitrogen, such as tankage, dried blood, guano, and others, are limited in supply, and their price is so high that their use as a source of nitrogen for general farm crops is out of the question. The chemical fertilizers, that is, the nitrate compounds of ammonium, calcium, and sodium, are also too expensive to apply to soils on which staple crops are to be grown.

In the bulletin dealing with the results of this investigation, the authors say:

"A crop that possesses the combined ability to grow rapidly in early spring and to decompose rapidly when plowed under makes an ideal green manure for feeding such a crop as corn. By virtue of its rapid rate of growth and large dry-matter production, it conserves large amounts of soluble plant food, especially at times when the soil would otherwise suffer heavy losses. It possesses in common with other legumes,

[1] University of Illinois, Agricultural Experiment Station Bulletin No. 233. Sweet Clover for Nitrate Productivity, by Albert Lemuel Whiting and Thomas E. Richmond.

when properly inoculated, the property of utilizing atmospheric nitrogen. This plant stores in its roots large amounts of reserve food (especially nitrogen) which becomes available upon growth in the spring of the second year. The leaves are very tender and decay rapidly when the crop is turned under green. The roots and stems decompose at slower rates than the tops. Thus the three different parts represent three sources of nitrogen that furnish three rates of nitrate production.

"Once a weed by law, sweet clover is now coming to be regarded by soil scientists as the greatest crop for soil improvement. Few soils are able to meet large crop demands for nitrate nitrogen. Since sweet clover will supply nitrogen at an insignificant cost, it could well be utilized as a green manure by most farmers. Wide use of it for soil improvement is sure to be made in many countries."

The limits of this paper will not permit an extended discussion of the other uses of sweet clover on the farm. It may be said, however, that it has come to have a recognized value as a hay or forage crop. The fall growth of the first year is generally preferred for use as hay. It is finer and makes hay of better quality. On limed soil well inoculated it will yield a ton or more of hay in September or October. The growth of the spring of the second year is ranker and coarser, but if it is cut in May live stock will eat it well. The harvesting of such a crop is, however, a difficult problem owing to weather conditions and the pressure of other work on the farm.

Sweet clover has not been much used as a silage. Some have put up the fall crop in this way, but ordinarily it is preferable as hay. The spring crop is so full of water that usually much of the value of the silage is lost in the juices that leak away. The fall crop of the second year cut in bloom makes good silage and sometimes yields as much as ten tons to the acre. The straw left from producing sweet clover seed has also been used for silage, but needs to be thoroughly wet down when put in the silo.

Sweet clover is undoubtedly much more important as a pasture and has become the principal pasture crop on some very successful farms. No trouble has been experienced in getting animals to eat it unless they have been turned in after it got too big. It is believed by some that if rightly managed sweet clover might become the main pasture crop throughout the corn belt. Sown with oats or on other small grain in the spring, the fall crop of the first year will usually furnish excellent pasturage for stock. A sweet clover pasture is usually available two or three weeks before other grasses. There is little danger of injury to the stand from close pasturing. To maintain the pasture in good condition, enough stock should be grazed to keep it down, and in case it gets too high it ought to be clipped but not low enough to kill the plants.

The combination of sweet clover and bluegrass in pastures has some distinct advantages. They grow well together even where there is a perfect stand of each. Sweet clover adds nitrogen to the soil and where the stand of bluegrass is poor it soon thickens up and is better than it would be without the sweet clover. Sweet clover adds to the total and

gives a longer season, and in some places has doubled the carrying capacity.

The value of sweet clover as a pasture was well demonstrated in many localities in Illinois during the drought of the past summer. Many midsummer pastures became so bare that stock had to be taken off. In Grundy County, one of the centers of sweet clover culture, the sweet clover pastures were in good condition in the middle of July after many weeks of hot, dry weather and were about the only pastures where stock could be grazed. The outstanding feature of the Grundy County pastures has always been their long period of usefulness. Bluegrass naturally dies down during mid-summer under Illinois conditions, and it is now the opinion of many that sweet clover will out-yield and out-carry any bluegrass pasture.

Next to its employment as a green manure, there is probably no use of sweet clover which gives so much promise and which lends itself to so wide an application as this combination of sweet clover and bluegrass for pasture. It may be profitable even on high priced land because of its quality and carrying capacity. It can also easily become a valuable asset on cheap lands and by its use greatly reduce the cost of keeping live stock.

If time permitted it would be interesting to review the experiences with sweet clover on many prosperous farms in the corn belt of Illinois and Iowa. It has been introduced into the rotation systems on many grain and live stock farms both for use as a catch crop to be plowed under and for use as hay and pasture and sometimes for the production of seed. It fits in well with all the different types of rotation whether or not they are in series running for two, three, four, or five years. Many farms in the corn belt in a very low state of fertility have been restored in this way without any loss of time in the production of the main crops that are grown for the market.

In the agricultural papers and the bee journals during the past two years, a great deal of attention has been given to the large annual white sweet clover, sometimes called Hubam, which was discovered in 1916. Trials of this new strain made in 1918 in all parts of the country showed most remarkable results. In comparison with other clovers, raised under the same conditions, it made astonishing growths, often attaining a height of five to seven feet and even more in some instances. Thus far there has been little opportunity for scientific experimentation with this new annual sweet clover, but some experiment station men believe it can be fitted into crop systems in much the same way as the biennial variety, while others are of the opinion that it is likely to replace all of the other clovers in its usefulness on the farm.

Sweet clover has long been highly regarded by beekeepers as a source of honey and is probably one of the best nectar-bearing plants that grow in the United States. In comparison with other honey producing plants it seems to be far less subject to variation in nectar production due to differences in temperature, moisture, and atmospheric conditions. While widely distributed in the United States, it has prob-

ably not been the source of much surplus honey except in those districts where it has been more or less extensively cultivated.

In very considerable measure honey production will always be a sort of secondary or subsidiary farming industry. There are of course some sections of the country, river bottoms and swampy lands, cut-over and burned-over forest areas, and rough, mountainous, and desert regions, where the beekeeping industry will always be able to stand alone. But with respect to a very large part of the country successful beekeeping will always be dependent on the cultivation of honey-producing crops on the farms. This is especially true of the great interior valley and particularly sections of the corn belt region where practically every acre of ground is included in cultivated fields. The cultivation of sweet clover has made honey production a much more successful undertaking in many localities than it was formerly. If sweet clover comes to occupy a still more important place in farm economy in the future, as many men believe it will, beekeepers will at the same time find it the basis of a more extensive and profitable industry for them. (Applause.)

THE PRESIDENT.—The paper is now open for discussion.

MR. STONE.—That is as good a paper as I ever heard read, and I want to vouch for everything. The more experience anybody gets the more he will realize that all of it is true. I would like to ask Mr. Weston one question: The second year's crop, what time can you plow that under?

MR. WESTON.—There seems to be no definite time, no very definite consensus of opinion. It has to be plowed under in time for the crop, some say about May 10th. Some farmers won't get a great deal of it plowed and the crop in by May 10th.

MR. STONE.—What time in the fall?

MR. WESTON.—I should say as late as it would be feasible. It should be plowed under while it is green. In the case of a spring crop, the idea there is to let it grow until it would yield one, one and a half or even two tons to the acre, then plow it under. It is the decomposition of the green tops, the leaves, the finer parts of the top, that yield that first supply of nitrogen in soluble form.

MR. STONE.—That is all there after it dies.

MR. WESTON.—But you are likely to lose some of it. You may plow your crop under in the fall and you can't be sure you will get all the nitrogen it would produce in the spring. It will decompose, and if there are heavy rains a good deal of the nitrogen will be washed away.

That is one aspect of the problem, of course, which is often lost sight of. There seems to be a tendency a good many times, if I understand the agriculturists right, to postpone the plowing under until the spring, then plow it under as quickly as possible and plant your crop of corn. This particular investigation I have referred to is an investigation on the use of nitrogen as a fertilizer of corn lands, not for any of the small grains. I should say you can't name any definite time for plowing under in the spring. That will depend on the state of the season, of course. It is always a troublesome time, at least the agriculturists say that because there is so much work to be done, the weather

is getting hot, the ground is likely to get dry, the sweet clover grows very rank and the plowing becomes hard. Of course, where tractors are used it isn't so serious, probably, but I am not sure it has been proved that the tractor in itself is profitable farm economy.

MR. STONE.—I want to warn you all against what I tried to do. We had a sweet clover pasture we had used for about six years. We sowed it two consecutive springs and it didn't come very thick the first year. You know it is all right if it doesn't come very thick the first year, then the second spring it will have a better chance to grow. We found after about four years it began to be so thick in some places that the seed expected to come this spring would be choked out. When we made up our minds to plow it under in the fall of the year, the season was so dry it all died, and we thought we could plow anything under with a tractor, but we found we couldn't plow that under. We disked it twice, but the disc didn't touch the ground. We had to let it go till spring and we had a hard time plowing it under then, but we finally got it under. It should have been plowed under green.

MR. WESTON.—Yes, it would have been good when you got it under.

MR. WOOLDRIDGE.—Does frost injure the value of it? In the fall plowing should it be plowed under before frost comes, or could it be delayed for awhile longer?

MR. WESTON.—Do you mean frost injures the growing crop?

MR. WOOLDRIDGE.—Yes.

MR. WESTON.—I should say not. Of course frost will stop its growth. Whether it will result in much loss I do not know. I don't think I have seen anything on that.

MR. KILDOW.—It will stand lots of frost.

MR. WESTON.—But I think that affects its growth.

MR. WOOLDRIDGE.—I know it checks the growth and it begins to dry up, but would it affect it before the frost comes, or after?

MR. WESTON.—To get the most nitrogen value it should be plowed under in the green state.

MR. TYLER.—Why plow this under? Why not let it go to seed and the beekeeper will get some benefit from it. As a seed proposition I think it pays better than a corn crop, especially this year.

THE PRESIDENT.—Yes, or any other one. The main object to Professor Weston's talk was to get the farmer interested so you could go home and get him to sow sweet clover.

MR. WESTON.—The farmers, generally speaking, will never go to raising sweet clover for bee pasturage.

MR. TYLER.—They can raise it from a seed proposition and it will pay better than anything they are raising today.

MR. WESTON.—When you come to consider the matter of economy, taking farming as a whole, it is its pasture, fertilizing, and forage that is going to determine the extent to which it is cultivated, and bee pasturage is going to be incidental. Of course, if we can get sweet clover introduced into our agricultural system, that is where it becomes a part of the crop and takes the place of other kinds of clover, and where it goes into pastures, as it may, it is going to be a better thing for the

beekeeper than under present conditions where red clover is used in crop rotation, which bees do not handle so readily.

It seems to me the success of the cultivation of sweet clover so far as beekeeping is concerned, is to get it spread as widely as we can, as generally as we can, so it will be in pastures as well as growing in waste places. Then there will be much more bee pastures than under present conditions.

MR. LOWER (Colorado).—I think if you can induce the farmers to sow it in their fields for a few years there will be enough along the highways for the beekeepers. They have it out in Colorado on the sage land.

MR. KILDOW.—I would like to ask if there are any statistics showing the increase in acreage in sweet clover in Illinois?

MR. WESTON.—Mr. President, there are not. I searched every available source of information for that. I have found, however, that the Department of Agriculture at Washington, Division of Agronomy, have some information, but they have never published it. This little map which I have was made up in the Division of Agronomy and Department of Agriculture, and is based on such information of that kind as they had, but there is nothing of that kind published, nothing that is available. That is one of the great problems which beekeepers and everybody else ought to be agitating and talking about. We do not know and haven't the information to enable us to form an opinion about many of these important questions, because we do not have the statistics. It is not only true of sweet clover, but true of other things; a lot of the statistics which the United States Department of Agriculture puts out are worthless.

You may have come across in some of the publications of the department statistics on the annual production of clover seed in the United States. They publish a lot of stuff about the annual production of clover seed, acreage in clover, amount of seed produced, present seed, and all that. What will you think when I tell you that item, clover seed, includes all kinds of clover? A great many farmers think it is red clover. It is red clover, sweet clover, alsike clover, white clover, every kind that is grown, all lumped together in that statistical report of the United States Department of Agriculture. You can form your own opinion as to what the statistics on clover seed are worth when you take all these things and put them together and figure out an average price for the whole thing. That is the character of a good deal of the statistical information that we get. We do not have anything of any particular value whatever, so far as the acreage of sweet clover is concerned.

Sweet clover hay is included in the United States Department of Agriculture statistics on hay. They publish every year statistics of the hay crop, but that includes timothy, red clover, alfalfa, sweet clover, and all the other kinds of hay, and those statistics are just as worthless from the point of view of the study of any one of these as our statistics on clover.

MR. TYLER.—About the only thing you can do is to watch the seed man. A few years ago if you wanted any sweet clover seed you had to

order it. Now the seed men keep it on hand and our farm bureau in Logan County has ordered two thousand bushels for that county.

MR. STONE.—I would like to ask another question. The University I suppose knows about the patent that Mr. Dillard got up for gathering the seed without cutting the clover, so you can get the seed and plow it under too. Do you know about that?

MR. WESTON.—I think I have heard them speak about that.

THE PRESIDENT.—Only one trouble about that machine you speak of, it is in the process of litigation. Two men claim the patent, consequently there will not be any made for about five years.

MR. WOOLRIDGE.—Has anybody had experience in determining how much nectar an acre of sweet clover with a reasonably good stand will produce. How many pounds of honey?

MR. DADANT.—I wrote to several different honey producers in all the states, I could pick up, and put a hypothetical question to them—how many pounds of honey did they get from 100 colonies of bees in a reach of 100 acres of sweet clover. They were all dependent on climatic conditions, but the average answers was about 80 to 100 pounds per colony. It was simply a hypothetical question, an individual opinion of probably forty or fifty different honey producers.

MR. COYLE.—How about the quality of white clover honey comb and extracted, compared with sweet clover?

MR. KILDOW.—I do not know, but E. R. Root says Hubam sweet clover will produce as fine a honey as any plant that grows.

MR. LOWER.—There are a few cases of pure sweet clover honey in front of you, you might look at it.

MR. E. J. BAXTER.—I have been advocating the planting of sweet clover for 25 years, and advocating sowing it along roadsides and waste places as much as one could.

I notice this map is incorrect. They give very little area to sweet clover in the west. Utah has hardly any sweet clover. When I traveled through Utah, I saw thousands and thousands of acres of sweet clover, and it produces by far more honey than the alsike. The alfalfa in southern Utah especially, has the weevil, which cuts down the crop very materially, but it doesn't injure the sweet clover and they get more honey from sweet clover than they do from alfalfa. The same in the Uinta Basin. The Uinta Basin was originally an Indian reservation. The government opened it to settlement and, I believe constructed an irrigation system, and a lot of the Indians were allotted a certain amount of land. The rest of it was thrown open to entry. They have thousands of acres which belongs to the Indians, and the Indian agent rents it out for five years, to have it fenced and improved, and one of the conditions is that the first year it must be sowed to sweet clover. In one bench east of Rossville, a tract seven miles long by two miles wide, there was one thousand colonies of bees and lots of room for more. They estimate their crop from 180 to 300 pounds per year per colony, so you see the possibilities are great. I believe sweet clover is the greatest honey plant we have in the United States, and in the course of time it will be the plant for honey. It produces a very good quality of honey.

I remember in 1903 I had a large crop of honey and I sold it in different parts of the United States. A man by the name of Smith in Michigan sent for five barrels of white clover honey. He said, "Be sure and don't have any sweet clover." I was sick at the time and told my man what honey to get for him, and when I got well I found he had got one barrel of sweet clover honey among them. In about two weeks the man came back with an order. He said, "Send me five barrels more honey. Send me sweet clover honey, even if it takes dynamite to blow it out of the barrels."

In 1877 the State Board of Agriculture at Springfield established a department of statistics. They appointed some five hundred correspondents. Brother Stone was one of them, I was one in our county. I gave them the crop statistics from time to time as they asked for them, and at the end of the year I gave them the crop report. Nauvoo is a grape growing center. They were grown there in the '40's. We are shipping out from there about 150 carloads of grapes every season when crops are good. I gave them a report of how many grapes were being shipped out every fall, and when I got their annual report I was horrified to see that the whole State of Illinois was credited with less than one-third of the grapes we shipped in Nauvoo in about three weeks. When I asked them how it happened, they said they had to average it over the State. That is the way you get your report.

Nineteen hundred and fourteen was a very dry year. I had to feed my bees all that season and in the fall, too. Not only did I have to feed my bees, but farmers had to sell their cattle because they had no feed for them. In February, 1915, I crossed over on the Mississippi on the ice, to Montrose, to take a train for Denver to attend the national meeting. There I saw one of our big farmers. He had a large farm right where I had one of my apiaries and had to sell much of his stock. He had no feed.

I said, "Why don't you plant sweet clover and save your stock?" He said, "I don't know that that would make any difference." I said, "One of your friends out here in the country, by the name of Solon, had seven acres of sweet clover, and he kept all his cattle, had plenty of pasture all summer long. Then I told him what Mr. Coverdale had told me, that he had planted some oats in the spring of that year, 1914, and that he had sowed sweet clover with it, and in the fall he had a fine growth of sweet clover after the oats were harvested. It made him two tons of very fine hay to the acre. I told him about that and about what Mr. Coverdale told me about stock. He had just been up to Chicago in September to market some of his stock. He said his steers were pastured on sweet clover without corn, yet he topped the market fifteen cents over cornfed cattle. The man said, "I am from Missouri, you will have to show me." A man stepped up and said, "I am from Missouri, too. I live at Jacksonville, Illinois. I got some of my friends together and we went up to Mr. Coverdale's and investigated. We were shown. We bought enough sweet clover seed to sow one thousand acres. Next spring we are going to rotate corn and sweet clover." You can't go in the west anywhere but what you will find sweet clover, that is the common crop everywhere. There is nothing to equal it in the amount of

forage produced or in the amount of fertilizer or in the amount of honey.

MR. KILDOW.—A few years ago it used to be that all the western honey was sold as alfalfa. I have noticed in recent years they want it all to pass as sweet clover. The brokers talk about white sweet clover honey and don't talk about alfalfa honey from the west. From my experience it seems to me the western honey coming in now is quite superior to what it was a few years ago.

MR. WESTON.—I want to say about that map, it is simply designed to show the distribution, not the acreage. Each one of those solid dots represents a county in which 50 acres is in cultivated fields. In Kansas, for example, there are about as many dots as there are counties.

MR. COYLE.—In the matter of sweet clover displacing alfalfa on the market, one great drawback to alfalfa is the reputation it has for candying. Some dealers I have met in the east will not buy western honey because it candied. Most men who handle alfalfa honey admit it candies more readily than others. For that reason, naturally the dealers will be more apt to say that they have sweet clover honey.

MR. E. J. BAXTER.—I do not believe that alfalfa candies more readily than sweet clover. Sweet clover candies very quickly.

THE PRESIDENT.—It is about equal in that respect. If there is nothing else we will go to the next paper, Locations in Illinois, by Edwin J. Kommer, of Cambridge, Illinois.

ADAPTABILITY OF ILLINOIS FOR THE LOCATION OF A BEEKEEPER.

(By Edwin J. Kommer.)

Illinois, as well as other states, has good and poor localities for beekeeping. Location in itself, however, does not insure production, for we have even in the ideal location good and bad years for honey production. Location and production are not sufficient to insure a brisk demand for your product. It must have color and flavor.

It is evident, therefore, in order to have an ideal location, there are important factors which make it adaptable and profitable. These are highlands, lowlands, climate, and flora.

The importance of the highlands and lowlands of the location, however, might be compensated by the other two. If, however, climate does not in a natural way compensate the ideal essentials of your location, there is the possibility that the highlands and lowlands become an important factor. Should your climate conditions not be favored with frequent rains, the hills would probably not be as favorable as the lowlands and swamps, which in many cases are not tillable and, therefore, offer plenty of flora for bee pasture.

Climate, however, becomes an important factor in those locations where physiography does not furnish the flora at all times, but is dependent upon the early spring and late fall rains. If the climate was such, that we have an abundance of early rains, this would bring out the flora for our summer crop of honey. If these fail us our summer crop will be a failure. Then, too, climate might be the factor to main-

tain and to bring out by fall rains the flora to produce the fall crop and winter stores.

Excepting the silk worm, the honey bee is of most economic importance among insects. Its importance is its honey. Therefore, flora becomes an important factor, not the variety of flora, but the abundance of suitable flora, as the flavor and color of the honey depends upon the kind of flowers from which the nectar is collected. Heartsease, Spanish needles, asters, white, sweet and alsike clover are Illinois' best honey producers.

Hence, combining these factors, early spring rains giving the heartsease a good start, would give us a good crop of heartsease honey. Then with frequent summer and fall rains for the clovers and asters we should have a good fall crop and winter stores.

In conclusion, I believe Illinois has a large number of suitable locations. Some can be made more suitable by introducing sweet clover. Some locations may be better than others, but since we cannot all have the best, I do not believe it is policy to crowd the other fellow and in so doing cut short his and your production.

THE PRESIDENT.—This paper is open for discussion.

MR. E. J. BAXTER.—Mr. President, there is just one thing that I do not want to let go unchallenged. The gentleman said that the honey bee next to the silk worm was the most valuable insect. I beg to differ there. I say that the honey bee as an economic proposition is the most important insect in existence. Aside from the production of honey, it does the pollenating of our plants. Even without the honey it would be more important than the silk worm. Years ago California fought the bees, got them out of the country, but they were mighty glad to get them back again. In Washington they paid rental to have bees put in their orchards. A great many of our plants would produce nothing without bees. A scientist said some time ago that there were about sixty special insects that fertilize our flowers, that the honey bee is one of them, that it was more important in that respect than all the rest of them put together.

In getting the law through the legislature of Utah that was one of their trump cards. Therefore, I say the honey bee is one of the most important of insects in the world.

THE PRESIDENT.—Anyone else anything to say in regard to this paper?

MR. STONE.—I think as far as the location is concerned, that the corn belt is going to have it. The agricultural bureaus are now all talking sweet clover as the best fertilizer; that means where there is the most corn raised, there will be the most honey.

COLONY MANIPULATION.

MR. KING.—I have a question: How may a person manipulate a colony of bees without getting stung?

MR. KILDOW.—That reminds me of what I heard Wilson, the expert of Mississippi, say. He said the way to do is to get a long rope, catch the bee and tie it by its leg, and when you get all the bees on that

rope then you can manipulate the hive without danger of being stung. (Laughter.)

MR. E. J. BAXTER.—I know a better way than that. You all know Mr. C. P. Dadant. He attended a bee convention in western Missouri this summer, at Mr. Diemer's place. He said that they opened hive after hive without a veil, nobody got stung. Why? Because he had a good strain of bees to begin with. Another reason, he went at it right. He didn't go at it in a hurried manner or in a harum-scarum way to arouse them and get them angry. He smoked them well first, saw they were well filled with honey.

MR. KING.—Does it pay to try to save late swarms. I would call a late swarm one that comes about November.

THE PRESIDENT.—You could save a swarm of bees at any time provided you had filled combs to give them.

MR. WILLIAMS.—Mr. Chairman, I thought I would sit still, but I don't believe I will now, since that question came up. Up at my place

Apparatus for catching swarms as invented by an Illinois beekeeper.

we had nothing this year but late swarms. I had no swarms until after the middle of August. Some of those swarms made me a super of comb honey. Do you think that was worth saving? I do, even if I should lose my bees. The only danger I think from saving late swarms is this, that they possibly will not store enough pollen for the feeding of the young bees in the spring and they will die then. That is my theory on saving late swarms. Of course if one should go through and supply that lack and feed them a substitute for beebread, then I think a swarm as late as the middle of September in my locality would be all right. On two occasions since I have had bees I have had a swarm on the eighth of September. That is pretty late I should say, but in both cases they made sufficient stores without any feed, to winter, and were good swarms in the spring. So I say save the bees at any time. Some of these people

are talking about having to feed. You might as well feed a swarm that comes off November first as feed them if they came off May first, if they had no supplies.

MR. E. J. BAXTER.—I will answer that in another way. I will say have the right kind of hives and manipulate them right. You will have no swarm to save, that is the best way to do it, isn't it?

THE PRESIDENT.—That is correct.

MR. BAXTER.—A swarm that comes out in November or even in October I wouldn't waste the honey trying to save them—something wrong with the manipulation. Have hives large enough to give them the necessary room and manipulate them right, and you will never have any swarms to speak of, even in good years.

THE PRESIDENT.—I have had but two swarms of bees in five years.

MR. KILDOW.—Some fellows want swarms.

MR. BAXTER.—I make all the artificial swarms I want.

FOULBROOD.

MR. KING.—Which is the easiest to eradicate, American or European foulbrood?

MR. KILDOW.—I will treat the American before I will the European. When I treat a colony for American foulbrood I have done with it until they steal that disease from some other colony. European I am not so sure of. One remedy we have in European is to kill the queen and let them go ten or fifteen days without a queen, then give them a young queen or a ripe queen cell. Sometimes it will cure it, at other times it won't. You are not sure, you can only wait and watch developments. But in American when I shake that I feel I have it done. Treating European foulbrood seems to be a case of wearing out. Sometimes we cure it the first time. Sometimes it will take a couple of times. You may think you have it cured one year and next spring it will show up. It is a pretty hard proposition, to my notion.

MR. WESTON.—How is European spread?

MR. KILDOW.—I don't know. I have seen very bad cases of robbing, but European foulbrood I never saw any come from it, I don't know why. I run across apiaries through the country myself, away from other bees, where a man has never introduced other queens or bees in his yard, and I find that thing dropped down in there. I am well satisfied how it spreads in the yard after it gets started, but how the first germ gets in there I do not know. I think it is scattered in the yard, probably by the nurse bees mixing. In numerous cases we have had reports where the prevailing winds blew across the street or into the other part of the yard, and scattered foulbrood.

MR. E. J. BAXTER.—Couldn't you say the same thing of the American. Take that Haas case, we inspected all the bees and couldn't find another case. Yet there was foulbrood. That was American surely.

MR. KILDOW.—Yes, that was American all right, but I prefer to treat the American rather than European. I have better success.

MR. STEWART.—It doesn't pay a man to treat European like American foulbrood.

MR. KILDOW.—No, we had that demonstrated when European foulbrood first was known. Probably some of you remember in one of our conventions a man from Chillicothe reported at one of our conventions at Springfield, that he had some disease, he didn't know what it was. He shook the same as for American, it came back that year. He shook several years, finally he wore it out. When he came to investigate, it was what turned out to be European foulbrood. Dr. Miller did that. He shook and melted up the combs. It doesn't seem to help it by shaking them. If I understand it right, the queen is affected, especially after the colony becomes affected quite badly, the queen becomes contaminated with that germ. So it is of no use to shake the colony and put them on foundation, because just as soon as the first brood commences, your disease comes back. If you would kill the queen and introduce a new queen at the same time, you would probably have a cure all right.

QUESTION.—Do you advocate killing the queen and leaving them queenless for two weeks?

MR. KILDOW.—That is what we advocate. Let them go queenless for ten days at least, if you give them a ripe cell eight or ten days after that, or if you give them a queen in a new cage you make it about eighteen or twenty days from the last larvae. If the colony is very bad, the queen is affected. Bees will do better cleaning if you put a queen cell in the colony. They will do a better job of cleaning than they will where there is a queen in the hive.

MR. KING.—A cell started in a diseased hive will hardly ever hatch.

THE PRESIDENT.—That has been my observation.

MR. KILDOW.—Of course some of them won't hatch. The only thing is to wait long enough till the brood of that colony has got past the stage. Give them a queen from another colony and you will get a clean brood.

MR. WILEY.—Out of the eggs of the old queen, if you are lucky enough to get one hatched out, it will show European foulbrood, so it doesn't pay to try anything like that. I have found that out. I have had European foulbrood the last four years.

MR. KILDOW.—I have had numerous colonies raise their own queens that come out all right.

MR. WILEY.—I never got one that would do it.

MR. BAXTER.—I think it would be advisable to give them a queen cell of a clean colony.

BUYING BEES.

MR. KING.—Which is the most profitable, to purchase for honey production three frame nuclei or three-pound packages of combless bees, both at the same price?

MR. KILDOW.—I will take the three-pound packages of combless bees. I would rather have them on my own combs, that is one reason. I feel then that I am not afraid of any foulbrood of any kind. For that

reason mostly, I believe I would rather have three-pound packages than three frame nuclei, I believe I will get more bees.

MR. WILLIAMS.—Isn't it a fact that when you get three pounds of bees you have three pounds of workers? And usually when you get these bees, the harvest is on and they are ready to go to work in the field. If you get your three frame nuclei you have to wait for them to hatch and get into the field, and you have lost probably three weeks' work, so the three pounds of bees would accomplish more.

MR. BAXTER.—I would say three pounds of bees every time, because I can put them in the kind of hives I want.

FOUNDATION.

MR. KING.—Which is the best, a full sheet of foundation or just part of it?

MR. DADANT.—There isn't any question but what the full sheet is superior to the starter or half sheet, chiefly for two reasons: One that you are almost assured of all worker comb, and the other that bees make wax at the expense of honey, and the more wax you can furnish them the better off you are.

SECRETARY WITHROW.—Mr. President, I would like to have Mr. Dadant state also why he considered it the cheapest. There have been quite a few fellows write to me and say they couldn't afford to use full sheets of foundation.

MR. DADANT.—It takes from twelve to twenty pounds of honey, as near as they are able to figure it, to make a pound of wax; therefore to make a pound of wax the bees would have to use up at least $2.40 worth of honey. With foundation selling at 85 cents a pound, you can hardly afford to charge your bees with making it—$2.40 besides allowing them to lose time in harvesting honey, which they might be doing while they were making this wax. There is a clear gain in using a full sheet of foundation over allowing the bees to make it out of honey.

THE PRESIDENT.—Then you haven't taken into consideration the fact that they would draw drone cells.

MR. DADANT.—No, I left that out entirely.

MR. WILLIAMS.—I saw a theory advanced a short time ago, that when the bees swarm they naturally secrete so much wax, and if you supply the sheets of foundation this wax they have secreted is lost, because they haven't any place to use it. I would like to know if anybody knows anything like that.

In hiving swarms, many of you gentlemen have seen this; on the limb, where they have been attached, are great sprinkles of wax, so that for any length of time, even twenty minutes, they will begin to make these little sprinklings of wax. Is it a fact they secrete all the wax they need?

MR. BAXTER.—In the early days when I used to use Langstroth hives and had swarms, it was a fact that a swarm lighting on a tree would sprinkle the limb with particles of wax, but the minute they are hived instead of using their honey in manufacturing wax, if you give them combs they will store that honey. I think of course it is natural

for them to secrete wax, because they know when they leave their hive they have to build, it is a provision of nature, but when we furnish them with necessary combs to store their honey, I don't believe much of that is turned into wax and stored. As to which is the most economical and which pays the best, if I had to pay 20 cents a sheet for foundation for the brood nest, I would use full sheets every time, rather than starters. I have tried them all, and as a matter of economy the full sheets are much cheaper than starters. You have good nice frames of solid worker comb, and that is what you want. They always build plenty of drone comb in the nooks and corners, therefore I say at all times, no matter how poor you are, use the full sheets and you will be much better off in the long run than by using starters.

MR. COYLE.—If you are in doubt, go to someone that has used inch starters instead of foundation, and compare with your own, you won't want any more starters.

ALUMINUM COMBS.

MR. KING.—Who has had experience with aluminum comb?

MR. LOWER.—I have had a full set of them for two years, and from the little experience I have had I can't see any particular difference.

MR. STONE.—Can't you see any advantage in them?

MR. LOWER.—I can't see any particular advantage in them, no. I thought once or twice they didn't work quite as well as the wax comb. The combs I got were shipped to me from Los Angeles. There is a wire runs down from the top bar to the bottom bar, and the aluminum strips are fitted around that to stiffen it. It always seemed to me that the row of cells over that wire on both sides of the comb almost from the top of it to the bottom bar, never had any brood. There was always a row of cells straight down that didn't have much of any brood on both sides of the frame, something about the way the wire was fitted in that made those cells unacceptable to the queen and the bees, at least the brood was absent. I am not real sure that the cells are always just the right size, either. I don't know just what the size ought to be. The natural combs as the bees build I believe are nearly 25 cells to the square inch of space, and I think they tried to make the aluminum frames that way, but I very often found in this set of aluminum combs there would be drones in some of the cells right in the middle of the comb. Of course there is not much of any chance for drone cells, not much space around the edges where the bees can build drone cells, and it is pretty hard to say whether the cells were intended to be worker cells or because there is a little variation in them. You at least find the drone larvae mixed in with the others occasionally. As far as the wintering is concerned, one of the objections which has been raised is in regard to temperature. Of course the aluminum is a much better conductor of heat and cold than wax. Wax is one of the best conservers I believe of heat and cold that there is, and it is thought the aluminum would give up too much heat, but I don't see that the colonies wintered any dif-

ferent on aluminum combs than on the others. They were all packed alike, but I couldn't see any difference whatever.

MR. NICHOLS.—I have had two years' experience with aluminum. Although I have never tried to raise brood where I have had aluminum comb, I have used it for surplus honey. I was in Iowa last spring, and my wife wrote me she had one of the largest swarms of bees she had ever had, and she put them in a hive without starters. Immediately she put full sheets of aluminum comb above them. The bees went in there, and they have raised brood and done exceedingly well as far as producing honey is concerned. As far as honey production is concerned I would much rather have the aluminum with what experience I have had with it, than to have the foundation, because I have used both the aluminum and the other side by side, and I found the aluminum produced again as much honey as I have from the starters.

THE PRESIDENT.—I had two sets of these combs and I alternated them in a hive for surplus honey. I found the one with wax combs were filled before the one with aluminum.

MR. E. J. BAXTER.—Isn't it natural to suppose that a swarm of bees would produce more honey in a comb already built out than in a foundation starter?

THE PRESIDENT.—Naturally.

MR. E. J. BAXTER.—Probably twice as much, so that doesn't prove anything.

THE PRESIDENT.—I found on the cool days in early spring there were very few bees clustered on the frame of aluminum. All the bees, in fact, were on the wax combs, just a few stragglers were out on the other combs; they changed temperatures too quickly. In the double wall hives I didn't see much difference, but in the single wall colonies I did.

FINDING THE QUEEN.

MR. KING.—What is the easiest way to find the queen in a very strong colony late in the summer, when no honey is coming in?

MR. STEWART.—Pick up that hive and set it aside. Put one in its place, shake your bees out and put the combs back in the stand, every bee that can fly will come back to your old stand. You can pick up your queen then.

THE PRESIDENT.—That is all right. But I believe you keep your bees in the house. I am afraid you would have a good deal of robbing.

MR. STEWART.—I am talking about outdoors.

THE PRESIDENT.—I am afraid you would start robbing too much. What do you say about this, Mr. Lower?

MR. LOWER.—Lift out the frames one at a time and set down on the outside. That gives one extra space, and I keep on looking till I get her.

MR. BAXTER.—Suppose they are blacks or hybrids?

MR. LOWER.—I never had any of that kind.

THE PRESIDENT.—I never had any trouble finding an Italian queen at any time of the year, but I have trouble in finding a black queen any time of the year, and I have tried Mr. Stone's plan, and I have got so I

put a queen excluder at the front of the hive. He said they couldn't fly, but they flew in just the same. The black bees do not sit still on the comb. They all run down off the frame into the hive or sometimes out in front, and the queen runs and hides. Mr. Bender has asked me to read his paper.

The Latest Drug Treatment for European Foulbrood.
(By C. F. Bender.)

There have been so many favorable reports of the latest drug treatment for European foulbrood, that our skepticism is shaken. After all, there is no real proof that drugs do not cure some things, sometimes. At least they sometimes get well after the drugs are administered, and who knows whether the drugs did not really cure? It is surely soothing to believe that our worst trouble can be removed by merely spraying with a solution that is cheap, and apparently harmless. I admit that I did not try sodium hypochlorite. I think I tried everything else.

To turn to the other side of the question, while I am not quite certain that drugs ever cure, I am pretty sure that they sometimes kill. Some even deny that proposition, but we will not stop to argue that question at present. Assuming that drugs do kill, we are surely on the track of the enemy; for the wise men tell us that we have only to kill the germs, which cause the death of the larvae, and our troubles with foulbrood will be ended.

Through an extensive experience in treating European foulbrood of the worst type, I found that any antiseptic that the bees would take, would cause the disease to disappear, while it was being fed. I used salicylic acid, carbolic acid, (phenol), boric acid, and beta naphthol. In the case of carbolic acid, the solution must be very weak, and the bees starving, or they will not take the syrup containing it.

The same is true to some extent of the other drugs mentioned. In an extensive queen rearing yard, where European foulbrood was present, I once fed beta naphthol through a whole summer. It was used in the proportion of one ounce of the drug to sixty gallons of syrup. There was no traces of disease for months, while the drug was being fed, but when we began to feed plain syrup, it promptly reappeared.

We must remember that the drug must be brought into contact with the germ, if the germ is to be killed by it. In the beehive, with its stores of pollen and honey, much of it scaled over, the larval skins adhering to the cell walls, the dried masses of infected matter are often covered with wax or propolis, it is impossible to reach all the germs that are so concealed. So we must regard complete disinfection, by any drug, as impossible. Even admitting that a drug might be found that is powerful and penetrating enough to reach all these places, we still have the infected queen, probably carrying the germs in her ovaries. If, as has been repeatedly proved, the queen alone can carry the disease to a healthy hive, though given without food or attendants, how can we disinfect the ovaries of the queen? If, in addition to spraying with sodium hypochlorite, we are to change the queens, giving a young Italian of resistant stock, then we may succeed. But changing queens is

not mentioned in the accounts of treatment. I have no doubt that in certain cases, the use of the drug in question may so weaken the germs that the bees may overcome it. But it will take experience to convince me that we have found anything worthy to be called a cure.

Mr. Miller tells us that the solution can be made by dissolving two pounds of sal soda in two gallons of hot water, and one pound of chloride of lime in one gallon of cold water, mixing and allowing to settle. The clear solution is to be used in an atomizer to spray the combs, after the bees have been shaken off. The white sediment in the vessel is merely chalk, and can do no harm except to clog the sprayer.

As the product of the mixture is to be a hypochlorite, I would suggest that the recipe should read chlorinated lime, instead of chloride. The mistake is of little consequence, as most druggists give chlorinated lime when chloride is called for. If the chloride is used the solution will be useless, as it will contain only common salt. I would further suggest, that as the hypochlorite acts by releasing its loosely combined chlorine, a solution of chlorine gas in water would, perhaps, be quite as effective.

THE PRESIDENT.—I am sorry Mr. Bender is not here to add his comment to this paper. The trouble with drug treatment on combs is the fact that any of the drugs he mentions—he doesn't stand up for that treatment—can't reach the spot, especially if the larva has dried down in the skin and become adherent. There isn't one of those drugs mentioned that will penetrate that scale. They have tried that treatment, as I understand, a number of years in England, and they have found it hasn't been a thorough success. Now with your ordinary hypochlorite, that is something we doctors use on practically all wounds, as a result of the late war. It is the basis of what is known as the Dakin solution. We keep a wound, regardless of how badly infected, thoroughly soaked till the gauze or bandage is ready to drip. We keep it there for about a week. We have no infection. It inhibits germ growth and gives the system a chance to overcome what germs may be taken up by the system.

In the comb you are confronted with a condition of a dry scale, and the only way that you could possibly use a treatment would be to soak it, and I have a very serious doubt if the drug would penetrate the scale and kill the germ, because as soon as that germ enters an environment that is adverse to its life it contracts, in other words goes into a little seed, you might call it; we call it a spore, and as soon as it comes to a favorable condition, this spore immediately starts to swell, develops a germ, and that germ immediately divides and makes two, and each one of those two immediately divides and so on, as long as there is food for it to live upon.

It has been the experience of all bacteriologists that any spore formation to be killed must have something that would kill or break that integument that is around this spore, and we found that boiling is about the only way known, you know what happens when you boil combs.

Take the typhoid germ, which is probably the most resistent of all bacteria that we have anything to do with. I have actually seen cultures of typhoid germs that we have grown artificially in bouillon, thoroughly

boiled for eighteen minutes, cooled, and a plate inoculated from that to another culture. I have seen them boil twenty minutes and they were killed, they were not capable of inoculating another culture. So far as freezing is concerned, I have seen it advanced to use carbon dioxide and freeze your combs. That is a bigger fallacy than the other one. Various germs have been known to live six months in a cake of ice and still come out and infect the individual. The infection of bee comb or of the larvae is practically the same as the infection of any other organism.

The question came up a while ago, of how European or American foulbrood was disseminated. When it comes right down to it, there is only one way to disseminate disease and that is to carry it. You revert back to the old idea too much that a disease came up out of the ground as a miasm. It isn't so. Miasms may reduce a man's vitality, or might reduce any animal's vitality so it would lose its resistance and become more liable to be infected, but European foulbrood is carried by something, whether it is the bee or some other agency, as the beekeeper. The disease doesn't deliberately get up and walk out of one man's apiary and go walking down to another one's, it has to be carried by some agency, and that agency is usually bees.

I have attended a good many beekeepers conventions, and I remember one out in Kansas where they talked for three hours about how European foulbrood was carried from one hive to another, and they advanced everything from man to wind. Wind doesn't carry it. It might cause the bees to drift, but the bee is what carries it, just as smallpox comes into a community if brought in by some individual, or it was brought in by something that belonged to some individual that had the disease. Things don't happen in this world by chance. There is a reason. There is something back of everything. We are not living in a chance world by any means, and I think if anyone goes out to disinfect his colonies of bees by any drug of any kind, although my friend Stewart won't agree with me, I think he is making a grave mistake and spending his time for naught.

Keeping Caged Queens.

Mr. King.—How long will a caged queen live in a hive with a laying queen?

Mr. Stone.—As long as she is supplied with honey to eat.

Mr. King.—She won't last but a very short time.

The President.—That question hasn't very much bearing on beekeeping. I don't believe any man would deliberately get a caged queen and put it inside the hive and have another one laying. There would be no reason for it.

Mr. Dadant.—There might be contingency, in the case of a man ordering half a dozen queens coming on a certain date, in order to make increase. When they arrived it was very stormy weather and he wanted to keep them till the weather got suitable to make the increase, which might be two or three weeks. That would be one place where it might

be worth while. We tried that a little bit this spring. We had some queens in hives for nearly three months.

MR. KING.—With the queen caged?

MR. DADANT.—Yes, caged between the frames.

MR. KILDOW.—I can't see any advantage in that for one reason: that queen would get the scent of that colony and she would be harder to introduce in another. It seems it would be better to keep her in a warm place. I don't see any advantage in putting a queen in the colony to keep her warm.

THE PRESIDENT.—It is easier to introduce a queen into your apiary from one hive to another than one which had not been in the apiary at all.

MR. TYLER.—Mr. Kildow was out at my place a couple of years ago in June to inspect some bees. We shook a colony of bees and caged the queen, set her down in one corner of the hive without any comb or frames. Three days later when we went back to shake the second time, they had a little sheet of comb and a nice young yellow queen. We put the yellow queen in the cage and went back three days later, and there was a young black queen commencing to lay. I thought I would leave one caged. I left her back in a corner of the hive, set the frames that I added to this colony to one side, and left her on the other side, and about two months later inspected it, and she was still alive. About two weeks later I was in the yard again and she was dead, so they live quite a little while, even though they are not placed between combs.

MR. KILDOW.—She probably lived till her own bees died and the others wouldn't feed her.

MR. WOOLDRIDGE.—This summer I bought a good many different queens from different breeders, some of them arrived at times when it was impossible for me to introduce them. I took them out and put them over the top of a good strong colony. I had never tried to experiment before for the purpose of having them properly fed. Not that I wanted to introduce them to this colony, but I wanted them cared for till I could get ready to introduce them. I went back several times and watched them, what care they were getting. I almost invariably found the cage covered with bees, and so long as I left them in I never had any ill effects and I would have good results introducing these queens. I didn't lose one of them.

THE SECRETARY.—I was wondering if that would affect the usefulness of the queen, having her caged that long. I don't believe she would be as good a queen as she would have been if she hadn't been caged.

MR. WOOLDRIDGE.—I don't think it does her any good. I would like to have introduced her as soon as possible.

THE PRESIDENT.—I think that is true; I think a cage shortens her life.

Securing Legislation.

Mr. Gill.—I do not expect to be here tomorrow, so I would like to speak. I am anxious that this State take a forward move. We have said that in our organization is our strength, and I am wondering if it is possible to get before the beekeepers of this State in some way or other, some sort of a policy so that they may understand, because when we go home we don't get a chance to talk with anyone else—we don't know what we should do. Do we want anything in the way of education in beekeeping in the State? Then we ought to have some idea about it, otherwise we will not have much information. Is our inspection adequate? Do we need more appropriation than we now have? We ought to have some idea about it. Doctor Baxter said this morning that I helped a little to get some increase in the appropriation. I did it more or less ignorantly; I didn't have a real good idea of what we

An Illinois River Apiary.

needed or could use to good advantage. It seems to me we ought somehow to get that formulated so that the beekeepers may know what is wanted, what we do want.

Mr. Kindig of Michigan said when they were trying to put through their schedule, they had it well planned and they went to those who were up for election, before they were elected, both democratic and republican, and asked them if they would stand for the thing, so whichever one was elected they had them after the election. That is something we have got to work for a year or two or three years ahead, if we are going to get things that we want.

MR. WOOLDRIDGE.—It is my belief that we must have a greater number before we can come to Springfield and expect to get any results. Without we have an appropriation sufficient for our needs, we might as well quit. But in order to do that, it seems to me we have got to get up some way of finding out every beekeeper in our locality or within the State. It seems to me that this association ought to instruct our Secretary to mail out cards to all the members, asking them to solicit their aid in joining this association or their local association, and let that local association be affiliated with the State association, in other words, the State association being the mouthpiece of the beekeepers of the State of Illinois. We must increase our numbers so that when the Senators and Representatives ask us how many we represent, we can give a good report. Let it come in by the thousands, not a few hundred. We are able to do it if we all get in, we ought to do it. We will never do anything till we do get together. For that reason I think we should have this card system established and go forward, and allot a certain amount of work to the members and get them interested, get them to see how many members they can get, and in doing that I think we can certainly get up a formidable number, so that they will have to sit up and take notice of us when we make the appeal for an appropriation.

THE SECRETARY.—I remember two years ago I did that very thing, sent out an application blank to every member, and sent everybody I could find was a beekeeper, one of those blanks to fill out. There were about twelve or fifteen men who sent me new names, and I also tried to get them to get their neighbors to join. As long as I can remember, there have been five or six men in the entire association that have sent in any names for membership.

MR. WOOLDRIDGE.—Did you have a follow-up system on that?

THE SECRETARY.—No.

MR. WOOLDRIDGE.—Sometimes if you annoy a person enough it will cause him to get busy.

MR. GILL.—I wanted to ask if the appropriation made this year is sufficient to cover the work that could be done in the way of inspection; if we got an appropriation of ten thousand by some means or other, would we have a plan for using that to advantage?

THE PRESIDENT.—Yes, it could be used to good advantage.

MR. KILDOW.—The appropriation we got this time will only about pay the extra fees for the deputy, yes, and it won't any more than do it, so for the real inspection we will have no more money than we had before. We could use ten thousand dollars in this State and get results.

MR. GILL.—There is one thing we want to work for—see these fellows before election.

MR. KILDOW.—They won't promise us anything before election.

MR. WILLIAMS.—I think you can send out all the postal cards there are in the State of Illinois to the beekeepers and so far as getting members is concerned, you will accomplish nothing or little. Brother Withrow I think sent me two or three and I know I didn't send him any back because I was very busy and didn't have any information

I could give him that would be of any value, but this I know that I can do. I can get up a beekeepers' meet in Pekin, Illinois, that so far as numbers are concerned will beat your State association. I have done it twice, I can do it again. We have 200 beekeepers in Tazewell County, one of the smallest counties in the State. The question is, how are you going to reach them. I am anticipating a little something. The way I see to reach them is through the Farm Bureau. If you can't reach them that way, or through the Home Department of the Farm Bureau, you cannot reach them at all. They will not pay $1.75 to the State association where they say in advance, "I can't go to that meeting, I won't go to that meeting." I asked a half a dozen of our people in our little town to come down here with me today. One fellow thought he would come but he didn't. That is true everywhere else, so let's don't try something we know is a failure before we start it.

The statement was made here this morning, I think, that there weren't any of the beekeepers said anything to the Representatives. Just

The Illinois River bottoms are fast being made tillable, but there are still many locations where Spanish needle and heartsease abound.

last week I buttonholed the Representative that lives in my town, and asked him what about the appropriation to the State Beekeepers' Association? Well, he scratched his head and said, "Williams, I really don't know, but I believe I did something." He is a lawyer of intelligence, a man that takes a great deal of interest in the schools of the State, in the Farm Bureau of Tazewell County. If you could show him 200 votes, he would be willing to do something. He voted for this appropriation, not because he saw something good in it, but because he felt he ought to do it. If you can make him see that there are 200 people in Tazewell County in the production of honey, it will mean something to him. You didn't have any trouble getting him to appropriate money for an exhibit of poultry at the State Fair, because Tazewell County had an

exhibit. Form these local associations. Probably the county would be too small. Make it the senatorial district. I know the increased appropriation will not any more than take care of the extra expense, so really as far as the accomplishing of the work is concerned, what we got added to the appropriation did nothing towards the advancement to the cause of beekeeping.

THE PRESIDENT.—Of course this subject of what we are going to do is for a special order of business tomorrow. Our friend Williams has a paper on that subject, but Mr. Gill is going away. If an appropriation comes out of the finance committee, recommended, we will get that, provided the Governor doesn't veto it.

If you want to make this thing go, you have got to get behind it, every one of you. Don't think there is any great advantage in belonging to the association itself. Don't expect to pay in one dollar and expect to get two back tomorrow. If you do, you had better quit, because it is going to cost you something, even to die. One reason why big financial men make money is that they put money in and may not see anything in it for twenty years, but they know there is something in it. Farmers, agricultural people, are the only people on earth that cannot control absolutely the price of their product. That is the reason you never see Jewish people farmers. They cannot control the price of their product, and consequently each man stands by himself and he runs along in his little old way, and thinks if he makes his own living he ought to be satisfied. Some of them don't do that, but if you will get together and cooperate, and when the Secretary sends you a letter at least have the nerve and the courtesy to answer, and then he will probably answer yours.

The way to get to this thing and get it started, as I see it, is to form county organizations. I don't care whether they are formed in the Farmers' Institute. If there are only two men in that county that are interested, get them all in. Don't have a Farmers' Institute in your county unless somebody is talking about bees. Go ahead with your organization. I want you to think about this thing. You are going to be back here tomorrow morning, if any of you have a plan, we want to hear it. We are going to get some place with this thing, or it is going to die. The older men that organized this organization did a wonderful work. They got a foulbrood law, they got everything that ever happened for bees in this State. Of course we are short on our educational work in the State institution, it is true. I wrote several letters over to the University to the president in regard to it. No student had demanded a course in beekeeping in the Agricultural Department, consequently it had never been put in. In the next place there was no appropriation. In fact, the minute the State University comes in before these finance committees they will "lop" off that appropriation because there is no demand for it.

You are not going to get anywhere unless you all get back of this. Tomorrow we have a place in the meeting for this idea of organization. Think it over. Perhaps you have some plan. I am sorry Mr. Gill won't be here tomorrow because I know he is vitally interested, but we are going to have some organizations over the State: it is up to you fellows

to get back of them. It is no small honor for you to be president of your local organization, wherever they want one. I don't think because it is called by a county name, that it would interfere with the fellow over in the next county. Take the State automobile association which is responsible, practically, for your sixty million road program, and responsible for all the automobile legislation in the last few years, I happen to be a director of that association and know something about its workings. We have county organizations, and where we haven't county organizations we have nothing but the State organization, and by another year we will have practically thirty-five thousand automobile owners in the State paying in at least five dollars to keep down fool legislation. In this county we have one. We do not confine it to the county, we call it the Springfield Automobile Association. There are 154 men in Cass County belonging to it. I don't think because it overlaps it makes any difference. If a man really sees you are doing something with the money he pays in he will gladly join the association. Those men never expect to receive directly $5 or $10, whichever they may be paying, but they see some results from what they are paying in, not directly to themselves, but to beekeeping in general, and I really believe if you can show the beekeeper that the industry as a whole is getting something for what it is paying in, that he will be with you.

I have taken up more time than I intended to on this subject, but we have one other thing here, before we adjourn.

MR. WILLIAMS.—Before we go further I would like to say when we were operating our association up in Pekin, the question was put to me one time—I am asking this for information—that if we maintained an organization of beekeepers we were amenable to the State for $25 fee. Is that right, or do you know?

THE PRESIDENT.—My understanding of the regulations that we have for any organization to come in as either a county or district, at the present time on our by-laws, is that they should pay in 50 cents per capita. That is what the Chicago and Northwestern are doing. If we make that any less, all societies must be on the same basis. Instead of paying $1.75 in to us, you would pay that much into the county or district or regional association, and 50 cents of that amount would be transmitted to the Secretary. That as we figure would about cover postage, etc., that we would have to expend. Now, we have got to have those county or regional associations as part of the State association, so that we can use the money that comes from the State. Under the old law the money was transferred directly from the State treasury to the treasury of the Beekeepers' Association; at the present time that money stays in the State treasury and is paid out upon warrants drawn by the Secretary of this association, signed by the President and transmitted to the Director of Finance, who O. K's. them and sends them to the Treasurer, and the Auditor then issues them.

THE SECRETARY.—I have been a member of this association for fifteen or sixteen years, and I have heard more good common sense talked in the last thirty minutes than I have in the last fifteen years. If everybody would get behind that and boost, we would get some place. There

is one thing you will have to do when you make out your bills, before you can get paid; every bill has to be made in triplicate. I have to have one myself, and they have to have two at the State House.

THE PRESIDENT.—Now, gentlemen, we expect to meet here tomorrow morning at nine o'clock. I expect the Auditing Committee to report the first thing in the morning, then we will have the report of the State Inspector of Apiaries. The two papers that we have will follow the election of officers. If there is nothing else this afternoon, we will adjourn.

THURSDAY MORNING SESSION.

THE PRESIDENT.—While we are waiting on the Auditing Committee, there are two questions in the Question Box. We will have the first one.

MR. KING.—Why don't this convention hold night sessions?

THE PRESIDENT.—I suppose the man that asked that would like to work all night, but there was to be a meeting last night, provided we could have a moving picture film. Due to changing the time of our meeting, we were unable to obtain this film.

SWARM PREVENTION IN FOULBROOD.

MR. KING.—In treating American foulbrood, what is the best way to prevent swarming?

THE PRESIDENT.—Do you mean absconding?

A MEMBER.—Yes, that is what I meant.

THE PRESIDENT.—Did they return after you had the queen caged?

MR. COYLE.—No, I have caged a queen and they went in some other hive. I always treat the diseased bees in a yard by themselves, treating two or three or four, and I found they would bunch up, all go in one and leave out a handful of bees with the queen on the cage. Of course that destroys your colony, and you have only one colony, but that is about all they are good for, to combine two or three into one. Still you might have a valuable queen that you wanted to keep.

MR. STEWART.—Do you value a queen very highly that has any disease of any kind in the hive?

MR. COYLE.—I haven't so far, but I can see where it would be the case, where I should value the queen. The best queen you might have in the yard, that you consider valuable for breeding, might get that disease some way.

THE PRESIDENT.—How often have you had this absconding to happen?

MR. COYLE.—Every time I have treated for foulbrood.

THE PRESIDENT.—This is American you are talking about?

MR. COYLE.—Yes, I shake whenever I can get time. I have got to do it and go.

THE PRESIDENT.—I have been through the mill with American foulbrood. My experience was if I shook early in the day I was very liable to have it. If I shook in the afternoon, in the late afternoon, very few absconded. Of course I used the method of taking away all frames and leaving them without frames in the entire hive body, with a wool cover

or long board over it. Next evening I take the cover away and give them their full sheets.

MR. COYLE.—You don't catch the queen?

THE PRESIDENT.—No, I give foundation, after about twenty-four hours' starvation. I tried it without that length of starvation and it would return on me. I have tried putting them in the cellar, and I don't think it is worth while. I shook thirty-five one year, and only had one swarm out on me.

MR. COYLE.—You shook them in the evening?

THE PRESIDENT.—In the afternoon, one after the other, right as fast as I could go, and the one that I had to abscond was the weakest colony of all of them. Really it did what you said it did, it really swarmed. What I did with it then was to kill that queen, and unite them with another colony, because it was not strong enough anyway. When they got out and hung on a limb, it didn't look big enough to me.

PRICE OF HONEY—FOLLY OF SELLING HONEY AT PRICES NETTING LESS THAN WHOLESALE.

(By Dr. Bonney.)

With an indefinite amount of the 1921 honey crop still in the hands of the producers, and the prospects of a good crop this season, honey producers have been set to guessing what prices will be the coming year. While no one may know to a certainty, I think I may state positively that they will be just what the producers make them, and to make myself plainly understood, if producers insist on selling honey at retail at about wholesale prices, or even a shade better, prices are bound to come down, but if we can agree on a fair price and stick awhile we will be certain of satisfactory returns.

What is a fair price, is a pertinent question, and one not easy to answer, but while one man may think it has cost him but five cents a pound to produce his crop, it is very probable that were he to keep an accurate account of all expenditures he would be surprised to find what the total would be.

In the first place, there is the question of time, and at the low rate of $3.00 a day, and allowing but 100 working days we have $300 to commence with. If the producer says his time is worth nothing, and that the honey he produces is clear gain we have no argument to meet him. However, there are expenses which he cannot avoid, and taking a 10-pound pail as a basis to figure from, his cans cost him, with freight and cartage paid, and some loss, not less than fourteen cents each, labels one cent, and if he does any advertising it will cost him at least five cents a can. If sent by mail there is another sixteen cents to be added. Besides these costs is that of equipment, taxes, interest on money invested and depreciation.

The wages a man earns in any productive business may be called his profit, but only after all other expenses have been met, but I have more than all this in mind, for let us suppose that the stores are selling honey in 10-pound pails at $2.00? They must make at the lowest estimate twenty-five per cent of the selling price. Let us pretend, further, that they paid $1.50 the can, of the wholesaler, and that some benighted

honey producer comes along and offers the same size package for $1.50. What is the inevitable result? This: The wholesaler must sell to the retailer cheaper, the jobber to the wholesaler cheaper, and the jobber will soon say to the producer: "I'll give you five cents a pound for your honey, f.o.b. my station."

What is a fair price for the producing retailer to make for honey, in all size containers? I think it can only be approximated by studying the reports sent out by the government, and after a deal of such mental effort I found that in May and early June a little better than eleven cents was a nation-wide average. I had previously sent out several letters to large dealers, and their replies, based on 11¾ cents per pound to the producer, indicated that we should get $2.25 to $2.50 the 10-pound pail, and I firmly believe that this is very close to the truth. Mail order houses are quoting blended honey at $2.55 the gallon, which is 21¼ cents a pound, 10-pound pails are selling at retail in Sioux City for $2.00 and in Council Bluffs the same. It is evident that $2.00 the 10-pound pail is the low price, for in this small town I am in I am getting 22½ cents a pound at retail. What I may be forced to by ruinous competition later on I am not thinking about, for my honey will keep, and the time will come when I shall get better than 20 cents the pound.

If anything calls for co-operation by the honey producers of the country a case like this does. I may say, it is our only hope. With county, state and national organization we may hope to set a price for honey and as there will always be some who will slash prices, a fund should be provided to buy up such stocks and stabilize the retail price. This is a matter of the future and we may only hope to attain this happy condition by liberal advertising as has been, I believe, commenced by the Honey Producers' League.

I may state that I have had unfair competition for years. Larger producers than I am have come close to me and sold 60-pound cans of honey at $5.00 when I was asking $8.00. In June, 1920, I had a very heavy flow from white clover and began with a quotation of $3.90 the gallon and had very heavy sales, notwithstanding that other producers in the county were peddling comb and extracted honey at 20 cents the single pound. Possibly my flamboyant declaration that BONNEY HONEY is the best in the world, as it is known to be, had something to do with my success in selling.

When the entire nation is on a buying strike with three or four million idle men and their dependents living from hand to mouth; with butter fat selling at eighteen cents against twenty-four in 1914; eggs bringing as low as thirteen cents, and corn but forty cents a bushel, we cannot expect honey to sell freely, and while the public will not buy at any price, the low price set by some foolish producers ruins our prospects for the future.

There is apparently no remedy for this in the immediate future. We honey producers, like manufacturers, farmers and merchants, must pocket our losses and hope for the future. The writer is old enough to have seen worse national financial conditions than those now prevailing, and if we all will produce and save we shall come to the turn in the lane.

I wish to emphasize what I have said about co-operation. If 500 members of the Illinois Association will unite in an advertising and selling campaign, buy up any crops they can where the producer wants to cut prices, and work for mutual good it would not be two years before we could sell in Illinois every pound produced in the State. Suppose we put $5.00 each into such a fund? This would amount to $2,500, and I know from what I have seen of the Texas Association, and the California Fruit Growers' combine that the $5.00 would come back and bring with it many other $5.00. I think our State Secretary would be willing to handle the honey, and I, for one, think a margin of one-half to one cent a pound would provide ample compensation. If there was no honey to be sold he would get nothing, but if he handled a large amount he would get fair or good pay.

One man in Iowa has been talking about 12½-cent honey, at retail. This means about six cents wholesale, or from jobber to producer, for there is and must be a margin of 100 per cent between the producer and the ultimate consumer. It is so in about all other food products, why not for honey? Did I say a margin of 100 per cent? That is a mistake, for oats, which cost about one-half a cent a pound in the elevator, sell at 6 to 10 cents a pound in the form of rolled or crushed oats. Common field corn, worth now two-thirds of a cent a pound worked up into breakfast food, so-called, sells for about twenty cents a pound, which is some profit, believe me. What is the profit? Oh, barely a trifle of 1000 per cent, and the joke is, if you do not load up the stuff with cream and sugar you cannot eat it.

Of course, it is the advertising that makes it cost, as it does every new thing, but honey is not a new thing. Still, the sale of it may be increased indefinitely by advertising.

Finally, little children, honey is rated the best food in the world, if it be not ruined by heating to keep it from granulating, so why should we not get the top price?

Honestly, I thought I was about done, but I must say a few words more, about granulated honey. We all know that heating honey up to 160 degrees to keep it from crystallizing in glass jars on the store shelves spoils color, aroma and flavor, and also the Vitamines. On account of this, I have resolved to hereafter draw off my honey so soon as it is settled clear, after being strained well and let it granulate. So soon as my supply of square cans is exhausted I shall put the honey into 5- and 10-pound pails, let it granulate and it is ready to be shipped, after I have put on a slip which reads like this: "All pure honey will granulate in time, which does no harm. If you prefer it in the liquid form simply set the can in a dish of hot water, when the honey may be poured off. It must not be boiled. Many prefer honey in the solid form. Try it once. This honey is absolutely pure."

There are several reasons why I shall do this. In the first place it saves the time, labor, cost and discomfort of heating; friction top pails are cheaper than square cans; for these call for cardboard cartons, for mailing; the honey will not spill if the can be wrecked, as cans are apt to be, for whole blacksmith shops are put into mail sacks with honey.

Dishonest mail clerks cannot well steal the honey, or part of it, the pails can be saved where cans cannot, and, finally, the friction top pail is vastly more popular than the square can.

Finally, again, unheated extracted honey contains the vitamines, as does the section honey, and this puts it on a level with the other, and as is well known, there is not much difference in the price of the two at this time, except in large cities.

After I thought I had this all finished I received a letter from M. G. Dadant, and his conclusions are of vital interest to us. The firm of Dadant & Sons, if I remember, sell only what they produce, from a matter of 500 colonies, in big hives, and are, therefore not interested in pulling the price to the producer down. Other firms, jobbers and wholesalers are trying to buy as cheaply as possible, and I'd be doing the same thing were I handling millions of pounds of honey, in every form imaginable, for, you must remember a clear profit of one cent a pound where a million pounds are sold amounts to a neat little sum. Mr. Dadant writes substantially as follows:

"With reference to the price of honey; it is a little early yet to make any suggestions but the woefully low price of sugar makes it doubtful whether honey will be able to hold up at a very stiff price. Carload lots of fine white honey are being offered as low as 6 to 8 cents F. O. B. California points which would mean about 8 to 10 cents here. It is my opinion that the beekeeper in this section, if he sells his honey to the jobber, will have to accept around 10 cents for it. There is nothing, however, to prevent him from retailing the honey out and he should be able to get at least 18 and more likely 25 cents for it if he is anything of a salesman."

He finishes with this remark: "So many beekeepers are such poor salesmen that it is a question in my mind whether it would not be better to encourage them to job their honey out and let some other fellow do the selling who can hold at a good stiff price."

Now I am not going to make any suggestions about prices, because, for one thing, it is a little early, but I make this proposition, that we get all we can. Let me tell you something. Not long ago one could not pick up an agricultural paper without seeing ads of tobacco growers, offering two-year old tobacco at as low as ten cents a pound. These finally disappeared, and I wrote a heavy tobacco producer in Tennessee asking him why. He replied that he did not get orders enough to pay for the ads.

Not long since parties in Colorado offered honey in 60-pound cans at a very low price, F. O. B. delivery point; that is, they paid freight. I no longer see these ads, because they did not get returns. Millions of real hard dollars have been spent to boost the sales of California fruits, but two-thirds of the prune crop of 1921 is still on hand, millions of pounds of raisins are unsold, green stuffs ordinarily shipped from the Golden State are allowed to rot in the fields.

People are not buying a thing they do not have to have. Some have no money, while those who have are squeezing it so hard the eagle screams. We might get up a little flurry with 15 cent honey, but I tell you I doubt it mightily. Moreover, about the time sales had started

some son of a gun would come along and set some 10 cent honey alongside yours, then where would you be? This has been done time and again, and will be done again. Few beekeepers have the money to buy up such stocks, and if they had, and did buy, just as like as not they would lose out, on account of a poor quality of honey.

No, as I said before, we must pocket our losses, but for Heaven's sake let us not add to them by talking 12½ and 10 cent honey. Get a fair price for what you sell, and what you have left will be clear gain over what you would have had had you sold all at a very low price. Or else jobb it off. Far better to take the jobber's price than to retail it at a cent or two more, for you will be doing a great deal of work for nothing.

Persistent advertising will sell some honey, but the question is: how to advertise cheaply, and I can inform you there is but one way, and that is to put up a sign HONEY FOR SALE HERE. Do not be afraid to go to a little expense, for a properly painted sign will last for years.

Were I living in the countryside I'd have a sign two feet wide and six long, painted on both sides, and set at right angles to the road where it could be seen by all traveling either way. I have commenced on a sign which I shall put in plain view of the railroad, that passengers may see. It will read:

FOR HONEY WRITE DR. BONNEY,
BUCK GROVE, IOWA.

This sign will be about three feet wide and twelve long, black block letters on pure white. As there are four passenger trains daily at my town, quite a number of people will get to read this sign. Will it pay? Well, storekeepers in large cities pay so much as $50 each for signs which are set so that those who pass in autos may read.

I shall now close, for good, by asking: Is it possible for us to start today a State-wide organization for an uniform price for honey?

THE PRESIDENT.—The paper is open for discussion.

MR. STONE.—Mr. President, I have been in the habit of selling my honey and taking orders in Springfield, selling it in five and ten-pound buckets, but I have almost quit that, because I could hardly keep my buckets filled fast enough to sell them from the painted sign on the tree out near the road. Everybody could see it going both ways. I have sold as high as eleven dollars' worth in a day, to people passing.

What I was going to say was this fall I took an order for a bucket of honey for sale at twenty-five cents a pound. I sent it in by my grandson that comes every day to school, and I gave him a per cent for taking it in. Afterwards I saw the gentleman that had ordered the honey. I asked him if he got his honey all right. He said, "Yes, and it is fine, but I bought too quickly. I see down at Connelly's (one of the highest priced places in town), they had honey in glass jars holding three pounds, for sixty-five cents." I said, "You will be back for my honey after you have tried that." I didn't know what they had, but I knew they had some cheap-grade they were selling at the price. I looked at it one day after that. It had candied, and it was blacker than any candied honey I ever saw.

Report of Apiary Inspector.

The President.—We will hear the report of the State Inspector of Apiaries.

Mr. Kildow.—I am going to change the time of making my report and make the report from July to July, so this time we will only have a half year's report and next year the report will come in for the year, the same as I have to make to the State, so both reports will be alike. Before there has been a little change in the report, because I couldn't make them just come right, so I am only going to give you from January 1st up to July, this year, and then the rest of this year will come on next year, to coincide with my report to the Governor.

I am going to give you what we have done since July 1st in a verbal way. I spent almost every dollar of our last appropriation. I came within a few dollars of getting all the expense money out, which left me within two hundred dollars of per diem.

REPORT FROM JANUARY 1, 1921, TO JULY 1, 1921.

Date.	Number colonies.	Number apiaries visited.	Number apiaries diseased.	Number days.	Expense.	Office expense.	Per diem.
January	*		*	3	$ 12 28		$ 12 00
February	151	3	2 A. F. B.	5	15 24	2 95	20 00
March	414	7	1 E. F. B.	16	53 43		64 00
April	555	31	6 { 3 A. F. B. 3 E. F. B.	29	72 05	1 25	116 00
May	1,951	120	25 { 21 A. F. B. 4 E. F. B.	59	135 56	2 00	236 00
June	2,395	140	44 { 7 E. F. B. 37 A. F. B.	57½	153 40	3 00	230 00
Total	5,466	301	78	169½	$441 96	$9 20	$678 00

* Inspection for sale of Bees.

Cook County has organized an association of somewhere in the neighborhood of 125 active members, and Carbondale came in last fall, with another organization. There is also in process now an association in Saline County, that will probably be effected before spring, and all these associations through the State now are coming in and getting beekeepers in their neighborhood worked up, so the chances are they will be in on the next year.

The deputies are all instructed to work up these things all over the State, where they can get enough members interested to get an association, and after they get that organized, to affiliate with our State association.

We are starting in this July on our new appropriation, and I am going to the State House tomorrow morning to try to get a line on what the Director of Agriculture will allow me in the way of carrying deputies and getting work in a satisfactory manner. I want to get deputies enough through the State so that they won't have too large a field to

A. L. KILDOW,
State Inspector of Apiaries.

cover. I think we can do better work than the way we are doing now, because we have big areas in the State where there is nobody and the deputy has to go a long way to get to them. If we can get the deputies we need, we can do more and better work with less money than we are doing at present. That is one of the things I want to talk to him about. Also I want two men in the north part of the State to work in conjunction with the Wisconsin inspectors along the line. I received a letter from Wisconsin a month ago, wanting me to cooperate on the north lines. Our membership has run down pretty bad this last year. We have got to get that back or when we go before the Legislature two years from now and ask for ten thousand dollars appropriation, they will turn us down.

MR. WOOLDRIDGE.—What process would you recommend for finding out as soon as possible the exact number of beekeepers in the State, and how to appeal to them, have them solicited by someone they know, and who is favorable for the organization. Have you any particular way of doing that?

MR. KILDOW.—It might be a good plan if the Secretary could send out to the members of our association in different parts of the State a half dozen return cards, and have the beekeeper send these to several of his neighbors throughout the county, asking them to give names of all the beekeepers they can find in their neighborhood.

MR. WOOLDRIDGE.—No doubt the members of the State association who are scattered promiscuously over the State would be able to do that much for their association, and it would be a helping hand.

The mere fact that he knows the beekeeper soliciting him no doubt would have some influence in causing him to join the association.

MR. KILDOW.—It might be a good plan to have this association appoint about three good men of this association to draft plans to work on. They might be able to do it better than all working together, but we ought to work up something of that kind. We could work from now until the next meeting of the Legislature so we will be ready and have some plans prepared, so we will know just what we are to do. If there is any question in regard to foulbrood that I can answer, if you will make it known I will try to.

MR. LOWER.—May I tell you of a method we use in Colorado, for getting rid of foulbrood? A beekeeper will find that some old farmer has some bees and has foulbrood. He telephones the inspector and tells him what it is. We have a county inspector in our county, and he comes and looks over the bees and tells the farmer just what hives are infected and just how to cure them. He goes away and tells him he will come back in ten days. He comes back, and if the farmer hasn't cleaned them up he burns them up, and if necessary takes the deputy sheriff. He gives him a chance first to clean up, and if he is defied he comes back with the deputy sheriff.

MR. WILLIAMS.—I used to be a deputy. When I first commenced keeping bees at Pekin I knew nothing about foulbrood, but it wasn't long till I found out there was something wrong. I had what I considered a beautiful colony of bees that I wanted to raise some queens

from. I wanted to do the whole business, so I took a queen out of that hive and waited for them to start queen cells; gave a comb to another colony that I wanted to raise a queen, they didn't raise any. Pretty soon the first colony died and I began to look around and found out there was something wrong, then I found out what foulbrood was, and I found out that Pekin was the most rotten place there was in the State for foulbrood. A good many people who had bees there had lost all of them. I commenced in my humble way to fight the disease, so I think I have it down now so it is not in anyone's apiary but Williams. The number of apiaries has been increased in town, and I think it had been done by mildness. There are some places where I expect it couldn't be treated that way, but I believe the "soft answer turneth away wrath," where violent means stirreth up strife too often. If we can get along on the "live and let live" plan, and helpful kindness to each other, I think we accomplish a great deal more than we do trying to fight them with fire.

MR. E. J. BAXTER.—Those are my sentiments. That is my method of procedure, but when a man begins to fight me then I am ready to fight him.

THE PRESIDENT.—That is the way I feel about a man going out to inspect and not being allowed to get on the place.

MR. WILEY.—You have to be careful to start them off right. I have been accused of leaving a man's hives open and the moths got in and killed the bees after I had gone. You have got things like that to contend with, you run up against a man who will say, "I don't pay any attention to bees. Look at them." You are not going to do any good by yourself, if he won't go with you you can't show him anything. It is surprising what you get up against. Sometimes a fellow fights you at the start, and if you will handle him real well he will get over his feeling and take you around all over the neighborhood, where if you showed fight you wouldn't do anything.

MR. STEWART.—With all this talk, gentlemen, do you realize that foulbrood is an awful weapon? There is nothing I am more afraid of than to make a man mad, and in a half hour on some dark night, where are you? Don't stir him up.

MR. KILDOW.—It is a weapon in the hands of a man who wants to do dirt. I said in the convention once before that I had a neighbor with fifteen colonies. I told him one day, Mr. Rankin, you have foulbrood here in your bees and you ought to clean it up. He paid no attention, but his bees died and he took the hives up into a loft of a barn and set them away. Of course, they had considerable honey and the first thing he knew the robber bees were coming in, getting that honey. What did he do? He went upstairs and opened a window and dropped those hives out on the ground, honey and all. What happened? Nearly half the bees in Putnam were infected from that day, so you see how it can be done. I don't think he did it for spite, but he wanted to get rid of them then and there, and he thought that was the best way. He is out of the business now, he hasn't any more bees.

THE PRESIDENT.—That is that ignorance I was talking about yesterday morning. Anyone else anything to say in regard to foulbrood or any question you want to ask Mr. Kildow?

MR. BENDER.—They are much more likely to respect a man from a distance than one that is close. The trouble has been where trouble was already started one beekeeper tries to induce another to clean up, and if he doesn't do it, he says, "I will get the inspector."

MR. KILDOW.—It is a proposition, sometimes, to get two fellows together on good terms, and it puts the inspector in a pretty bad position to try to pacify those two fellows.

MR. STONE.—We might go to the Bible and find out that the Saviour Himself said, "A man is not without honor, save in his own country." As soon as you find a man in his own country, you know as much as he does.

THE PRESIDENT.—I don't think this applies alone to beekeepers.

MR. BELATTI.—I have a little suggestion to make. I think if every member of the association would visit his neighbor beekeepers and try to give them a little advice, it would help some. I know in our county anybody that gets anything wrong, they want me to come and see what is the matter. I don't know very much, but I always make it a point to go. If it is something I don't know, I will pass it on to the State Inspector and let him find out. If anything goes wrong I usually know of it shortly and some of them ask me to come and look at their bees. I think those things would all help to keep disease out of a locality where a beekeeper is.

MR. KILDOW.—That is where our county organizations would be good; they commune together and all feel on friendly terms.

MR. STONE.—I think when anyone goes to a neighbor it is a good plan for him to tell them what the authorities above him say.

MR. KILDOW.—Better leave that to the last thing, though.

MR. BELATTI.—They all know I had disease there once, and that I got rid of it since.

THE PRESIDENT.—So they have a lot of confidence in you.

MR. WILEY.—The best thing when you go to work on a neighbor's bees is to get his confidence first.

MR. E. J. BAXTER.—We have got to change our law and our methods of inspection if we ever want to get anywhere. As long as we go around this way we are never going to get anywhere. We clean up a few acres and do somebody some good, and at the end of the season it will be just about where it was at the beginning. We need more money, and to change our methods of inspection.

MR. KILDOW.—How are we going to change the law?

MR. BAXTER.—I believe we ought to have local inspectors, either district or county inspectors, then a State inspector to supervise. In the west, where they depend largely on the production of honey for an income, in the counties at large they had county inspectors, as Utah, Colorado and Idaho, even in California. Maybe we can't do that here. We could have district inspectors, covering a congressional district. All it is necessary to do is go before the Legislature strong enough, show them the importance of it and of the bee industry, not only as a means of honey production but as a means of pollenization of our flowers, and I think you will get what you want.

MR. KILDOW.—How is that plan different from the one we are working on now? Instead of counties we are getting a deputy here and there, all over the State, where we can.

MR. BAXTER.—You haven't got enough of them.

MR. KILDOW.—It is on the same plan.: All we have to do is enlarge it. I have got the deputies scattered all over the State where I can get one. All I want is more money to put more deputies in where they won't get too far from their own home.

MR. TYLER.—I think we are getting off on the wrong foot on this police method. I think education is the proper way. Mr. Kildow was out in our place last June, and you remember, Mr. Biggs and I were the only beekeepers that went with you through my apiary. Biggs knows

Apiary and Honey House of F. A. Wicklein at Percy.

American foulbrood when he sees it and I know it, people think they have got it, they call on Mr. Biggs or me. I think it ought to be more along the line of education. Quite frequently the beekeeper will talk nice to you as long as you are there, but after the inspector is gone he tells other people around—not beekeepers—how he run the inspector off the place, which he really didn't do.

MR. KILDOW.—An inspector can't talk to a man in a yard two minutes but he is talking education to him.

MR. BAXTER.—Some of us "old-timers" know what education means. Before this law was enacted this association undertook to eradicate foulbrood in the State and to do inspection work. Our late president, Mr. Smith, inspected and tried to clean up foulbrood. This association paid his expenses. We went to work and had this law enacted, and the pur-

pose of this law is to educate, but at the same time we have got teeth, but the trouble is the teeth are not long enough. If you want to have a law respected in this country you have got to have teeth, and the more dangerous the teeth the more respect the people will have for the law. I believe partly in Mr. Pellett's method, his method was through education. He said teeth were a failure but you have got to have them.

MR. BISHOP.—About two years ago I changed localities. I formerly lived at Virden, Illinois, and moved from there to Taylorville, and I moved over as I went, about one hundred and twenty-five colonies of bees, and they were nice and clean. I hadn't had any foulbrood for a number of years. I had been living there, not more than about a month, I presume, or two months at least at the outside, and there were quite a few parties around Taylorville, in and near Taylorville, that have a few colonies of bees ranging all the way from two or three to twenty or twenty-five colonies, and they began to drop in once in awhile for a little information in beekeeping. Of course I always treat them nice and courteous, and I give them what information I can. They wondered if the bees didn't have some disease. They would invite me out or ask me if I could come out and examine their bees and see whether they were free from disease or not. Finally I made up my mind I would try to help them out and try to keep my own apiary clean, so I started out and examined quite a few. In some places I would find American foulbrood, some places I would find European, some places I would find both in one little yard. Very seldom would I find a yard of any size entirely free from disease and I gave quite a few of them instructions in treating the bees. Quite a few of them did the best they could and some of them cleaned up and some of them I couldn't get to do anything.

Of course without any authority all I could do was insist. So, finally this summer they came so fast I couldn't keep up with them, and I can't look after all of them in that vicinity without getting a little something for it, but I did this in order to help my neighbors and to help myself. There are a great many of them who have profited from the instructions I gave them.

THE PRESIDENT.—If there is nothing further we will proceed with the next paper. The next paper is by W. H. Williams, of Pekin, Illinois.

CREATING INTEREST IN BEEKEEPING.

(By W. H. Williams.)

Mr. President, Ladies and Gentlemen: I find what I have to say has been threshed out three or four times, but sometimes it is a good thing to say a good thing over many times before it is learned.

I feel the honor deeply, to be permitted to present to you this paper expressing my views as to how to create a better interest in beekeeping.

In order to better any condition we must first know the need of a better condition. First of all there are too many persons keeping bees that are simply doing so by reason of circumstances. In my locality many people have been getting their start from a stray swarm captured.

I have several such in mind, who were very enthusiastic at first but afterwards their interest waned and no care was taken, many times no room for storing being given the little willing workman. The result you know before I tell you: They either contracted some form of foulbrood or swarmed themselves to death. The wax moths came along and mercifully cleaned up the remains, and there ends a little chapter in beekeeping history, in failure, where, had a little education been at hand, an actual failure should and would have been a success, furnishing many hours of pleasing recreation with the added blessing of some dollars of profit.

I am not one of those calamity howlers that are constantly pushing the idea that we have too many bees and too much honey, and that the market is glutted, but rather I believe with all my heart that the added beekeeper to our ranks creates a larger demand for honey that must be satisfied.

Since I began shipping bees in Pekin the industry has grown from two beekeepers to twenty-two, and from twelve to one hundred and fifty colonies. I believe the consumption of honey has caused the increase of the bees.

These conditions I am led to believe are largely the result of some meetings held in the interest of beekeepers and some articles which got into the daily papers. Yet with all this, I feel there is a great work to be done. We are not of one mind as to marketing, not one of the twenty-two beekeepers other than myself having given the matter any thought as to how much honey was produced and certainly no thought as to how much should be required to sweeten Pekin till the next crop. Result, a wild scramble to sell all the surplus the next week after taking off the honey. This need not be the case if we had an organized idea as to the other fellow's interest.

This organization idea can only come through teaching, and an aim strong in the belief that our association—I mean the State association—must, if it deserves to live, get busy to correct such existing condition by putting capable instructors in the field, to go up and down teaching the possibilities in bee culture. You will ask how this can be done. I will tell you what I think, you may think differently.

The Farm Bureau through its adviser can put in each meeting of farmers a small place for beekeeping, for bees are the very life and vitality of many of the fruits and crops of the farmer. No adviser can well afford to ignore the place they occupy.

How to accomplish this desired result, is for us, as a State Beekeepers' Association, to organize locals all over the State, making a county or two or maybe three of the most contiguous counties as a limit.

This will require money, and the inspector cannot spare any from his meager store. I would therefore suggest that a license be required of every one keeping bees, and a small tax to be collected on each colony, a party refusing to qualify as a beekeeper upon conviction to be fined double the license fee and costs. I understand Utah, Connecticut and possibly other states have such laws.

Licensing Beekeepers.

The President.—Gentlemen, this paper is open for discussion.

Mr. Tyler.—I thought of that license myself, but the trouble is such a law would be unconstitutional in this State. While we might get such a law passed, people would find out it was a bluff.

Mr. Williams.—There are thousands of occupations in this State that are licensed. Why should beekeepers be any more of an exception than any other?

Mr. Bender.—A doctor must have a license to practice medicine because he practices on the lives of other people. But in this case if a man is not a competent beekeeper nobody suffers from it but other beekepers, and for that reason it wouldn't come under the exception to the general rule, which is that a man has a right to do as he pleases unless it can be shown that what he pleases to do is an injustice to the people at large.

Mr. Baxter.—That used to be the case, but it is not that way any longer. Our liberties have gone long before. A man can't do any more as he pleases now, not by a long shot, besides under the police regulations of this State the Legislature can do most anything they please.

Mr. Stewart.—As long as you please to do right you can do as you please.

Mr. Withrow.—I would like to ask Mr. Baxter, in Utah do they tax the beekeepers there?.

Mr. Baxter.—Yes, they are all registered. Every beekeeper in the State has to register every colony he has.

Mr. Withrow.—You could get an appropriation under those conditions, but I don't believe you could get it here till bees were taxed.

Mr. Baxter.—My bees have never been otherwise than taxed.

Mr. Bender.—It might be possible to have a licensing law of that kind and require a man keeping bees to get a permit from the State Apiarist.

The President.—I, personally, think we can get a law of that kind through. There are not many men keeping two or three hives of bees that will go up to the Supreme Court to find out if it is constitutional, and the other fellows don't want to.

Mr. Stewart.—When the inspector destroys our bees, should we get pay for them?

The President.—No, you are a detriment to the other fellow.

Mr. Bishop.—I don't think beekeepers ought to get any pay for the colonies destroyed, because lots of those people think that would be a good way to get a buyer for them. They will let them get foulbrood and have some of the neighbors notify the inspector, and he will come down and destroy them, and the beekeeper will get the money out of them. If they have disease they are of no use to him or anybody else and I think they should be destroyed.

Mr. King.—In bee disease you are given a chance to clean up before they are destroyed. If you don't clean them up, then destroy them.

MR. BAXTER.—When you destroy a colony of bees you simply destroy combs and frames, but the hive still remains, and that is worth more than all the rest of it put together.

MR. TYLER.—I think the American foulbrood can be compared more to the hog cholera. We have strict laws on hog cholera. A man with hog cholera on his place has to be pretty careful or he will have some of his neighbors on his back. I don't see why we can't have a law on American foulbrood like that for hog cholera.

THE PRESIDENT.—We will have the report of the Committee on Resolutions, on the death of Mrs. A. I. Root. Mr. Wooldridge.

MR. WOOLDRIDGE.—Mr. President, we present the following resolution:

The Illinois State Beekeepers' Association in session assembled having learned of the death of Mrs. A. I. Root, be it

Resolved, That the association express the sympathies of its members to Mr. Root and his family in their bereavement and that copies of this resolution be spread on the minutes of this association and be sent to Mr. Root.

J. R. WOOLDRIDGE,
M. G. DADANT,
Committee.

The motion was put, seconded and carried.

THE PRESIDENT.—Report of the Auditing Committee.

MR. DADANT.—The Auditing Committee have examined the reports of the Secretary and Treasurer. We find a balance of $130.08 in the treasury. There has been collected during the year $107.58, which has not yet been turned in to the treasury, but against which there is outstanding the salary of the Secretary, $100.00, which would leave $7.58 balance, making a total in the treasury of $137.58. We move, therefore, that the reports of the Secretary and Treasurer be accepted, the Secretary to turn over the $107.58 still due the Treasurer, the Secretary to be paid in the usual way.

The motion was seconded and carried.

MR. WILLIAMS.—I would like to ask a question for information. It seems from what I can gather from yesterday and today, that the membership has fallen off. To what extent has it fallen off?

THE SECRETARY.—Last year I think it was 258. It is now 125.

THE PRESIDENT.—There was a mistake made in this 1920 report. The membership as reported in this report is of 1921. I didn't observe the mistake until after we had gone to press, but we should have reported in this report the 1920 membership, because this report is for 1920. We have in this report at the present time the 1921 membership. As I looked over two or three reports back, I believe that is a feature about it we have got into as a result of years of usage, putting in the wrong membership; we should put the membership in the 1921 report what we have collected for that year, not put in the membership we have collected for 1922.

There is one other thing we ought to do. We ought to have a year start at some time and end at some time. We ought to have a year from the first of January to the 31st of December, it would save a lot of work to the Secretary. Then he can send out all his notices to pay dues. The way it is now, he has to send out a few notices every month.

MR. WILLIAMS.—As I understand, the membership would expire with the expiration of the subscription to the Journal.

THE PRESIDENT.—That is the way it is now, unless it has been extended. The membership is from the day the man paid for one year.

THE SECRETARY.—Mr. President, there ought to be some certain date set. Those at this year's meeting will expect this year's report, and also last year's report. We can hardly give them two reports for one membership fee.

THE PRESIDENT.—We have had some extra reports, and when a man came in and we had 25 or 30 or 100 reports lying around, we couldn't see but what we might as well give one to him, especially if he was a new member.

MR. WILLIAMS.—A member now should not be entitled to the report of 1920.

THE PRESIDENT.—No, he is entitled to the 1921 report.

MR. STONE.—During all my secretaryship I wrestled with that question and never got it settled. The only way we could do was to give them that report when they signed at the Fair, as a gift, but I got in the habit—the Secretary will notice how the book is—I would put in an eight, if it was for the eighth of the month, just in the column that I had their fee entered, and if they came in during the first three or four months of the year, up to that time they were entitled to the next report. If they came in later than that, they were not entitled to any report till next year, and their membership would cover a year from the time they joined.

THE PRESIDENT.—Now we will proceed with the election of officers. Nomination for President for the ensuing year is now in order.

Dr. A. C. Baxter was nominated, the nominations were closed and the Secretary was instructed to cast the vote of the association for Dr. A. C. Baxter for President. He was declared duly elected.

PRESIDENT BAXTER.—Gentlemen, I thank you for the confidence. The next order of business is the election of five Vice Presidents. Nominations are in order.

Messrs. Stone, King, Williams, Tyler and Bender were nominated; Mr. Baxter, Mr. Weston and Mr. Dadant having declined.

On motion the rules were suspended and the Secretary was instructed to cast the vote of the association for the five nominees for Vice Presidents in the order nominated.

They were declared duly elected.

THE PRESIDENT.—Nominations for Secretary are in order. Mr. Withrow, Mr. Dadant and Mr. Jeffries were nominated, the former and latter withdrawing in favor of Mr. Dadant.

The Secretary was instructed to cast the vote of the membership for Mr. Dadant and he was declared duly elected.

MR. DADANT.—Fellow members: I appreciate the honor. At the same time I feel quite a responsibility attached. In view of the acclamation after the election I am afraid I am not going to be able to fill the bill. I will do my best, anyhow.

THE PRESIDENT.—That is all any man can do. Next in order is the nomination for the office of Treasurer.

Mr. Seastream was nominated and the Secretary was directed to cast the vote of the membership for him. He was duly elected.

MR. KILDOW.—I want to move that we give a vote of thanks to our Brother Wooldridge, of the Chicago Cook County Beekeepers' Association, for coming down and lending his help from a live association.

Seconded by Mr. King, and unanimously carried.

MR. WOOLDRIDGE.—Mr. President, I thank you for the honor shown me. I do not feel I have been so very much help. I have never had the pleasure of attending a State meeting. I am active in Jackson County, also more active in the Cook County Association, and we certainly have got some interest stirred up at both ends of the line. It is my object to get every beekeeper in the State into some local, affiliated with this State association. That is my idea of how we can come to Springfield and get the money we need.

MR. TYLER.—I move we extend a vote of thanks to Mr. Withrow for his services as Secretary of the association for the past two years.

MR. JEFFRIES.—Second the motion. (Unanimously carried.)

MR. DADANT.—I move we extend a vote of thanks to the hotel management, for their many courtesies and for the use of the hotel for our meeting.

MR. BAXTER.—Second the motion. (Unanimously carried.)

MR. TYLER.—How about the National Association, are you doing anything with that?

THE PRESIDENT.—Read the letter you have, Mr. Secretary.

(The Secretary read the letter.)

THE PRESIDENT.—Last year at the last hour of the meeting the Illinois State Beekeepers voted to enter the Honey Producers' League. I thought I had told the Secretary to send a notice to the men that wished to join this association, to pay one dollar so that we might raise one hundred dollars; he says I didn't. We cannot take a single dollar of our State money to pay to join the association, because that is something without the State, and the State Finance Department will not permit it. The only thing we could do was to take the money from our own treasury—we didn't feel that we had the money. There is only one way we can go into the Honey Producers' League, that is for one hundred men to put up one dollar apiece. That is up to each individual member. We have voted to come into the association, but we haven't the money to do it. I think we should be affiliated. I think our new Secretary had better send out those notices and find out what the feeling is. If anyone has anything to say in regard to this matter, we will be glad to hear it. As far as sending a delegate, we haven't the money to pay the expenses of a man to Salt Lake, from our treasury, and we cannot take it out of the appropriation from the State. If there is some man going whom we are willing to entrust with our affairs, it is all right.

MR. BAXTER.—I think we ought to join. I think notices ought to be sent out.

MR. DADANT.—Why not put it up now?

THE PRESIDENT.—What is the pleasure of the association in regard to joining the league, how many here are willing to contribute to the fee for the league, stand up. (Approximately a dozen arose.)

THE SECRETARY.—Mr. President, I believe the majority of us voted we would go in. When you send out your notices you will find some of them won't come in to the association if you have got that attached to it. They are afraid if they get tangled up with the association they will be responsible to the league, that if any suits come up they will be connected with it. I got some letters like that last year.

MR. WILEY.—I think this association ought to be members of the National Honey Producers' League. They have already done a whole lot. Last year I was at the league meeting at Indianapolis and there wasn't anybody there to answer for this association. I believe we ought to back that up. It looks like a dollar apiece with the chance of raising the price of honey one cent would bring it back to you four fold in the next year.

MR. TYLER.—I think the way to settle it is right here. If we can't raise one hundred dollars here, let's don't say anything about it.

MR. DADANT.—I think we ought to raise just as much as we can now, and I will take the responsibility of raising the rest.

THE PRESIDENT.—All right. Start your paper, and each fellow say what he will give.

MR. WITHROW.—Mr. Dadant, take the Secretary's chair.

(Mr. Dadant then occupied the Secretary's chair.)

MR. WILEY.—I was about to make the proposition that I will pay the railroad fare if I am efficient to go, I don't know whether I can attend the business after I get there. Probably we can send a man that can do a good deal more. I don't know if I can do much.

THE PRESIDENT.—The work is outlined. The only thing is they want a representative there, that is the main point. You did very well at Indianapolis.

(It was moved by Mr. Dadant, seconded by Mr. Coyle, that Mr. Wiley be elected a delegate with the understanding that he handle his own carfare. Carried. The association to take care of the other expense.)

MR. KILDOW.—I think we ought to thresh out the county association or district association, whichever it be, and try to get some line on that, or else make suggestions and have a committee to look after it. I would like all the help I can get, to help me in my work.

MR. COYLE.—This committee, I feel, is not only concerned with the matter of getting appropriations for foulbrood, which is simple, but with county or district organization working in certain territory, which, to my mind, is a more effective method for effort than any National Honey Producers' Association. How well we know what it means to have the little fellows coming in in the fall and dropping their honey on the market. We only get a good crop once every other year. Some fellow will drop his stuff for fifteen cents a pound. Anyway, I suppose every man that has attended this convention and paid his own way to come here, ought to be interested enough to be a member of a committee or

be one man, if there is no other in the county, to go back to his county and work up a membership in this association that will bring on a county organization. If a man will come here to this organization and isn't willing to go out and speak to his beekeeper friends and his acquaintances about this matter, he has no business coming to this meeting, and I take it that every man that comes here is perfectly willing to do all he can.

We have got to do it. The hardest work is coming. The honey selling campaign is coming within the next six months, in my opinion, and prices are going to go down, that is the way I look at it. We have got to do some advertising,I mean advertising that is not going to cost us too much money. I would like to see the President of this organization appoint one man or two men, if there are enough present, or three men, from every county in this State, to go back to their counties and get all the members together and organize a county association or a district association. In the next case, if you don't have any one man here, perhaps you know of some man in some other portion of the State, that will go ahead and do something, so that we will have an organized effort all over the State. In the meantime you can appoint your committees and let those men know how the committees are to be organized.

THE PRESIDENT.—Anyone else anything to offer?

MR. WILLIAMS.—I have had experience this fall in my little town. There was a lady beekeeper up there, produced about 1,800 pounds of comb honey. She had never produced that much before, and she thought she would never get rid of it. She put it on the market at once, for 25 cents a pound. She saw me Saturday evening and said, "I wish I had one thousand pounds more, mine is all gone." I had been holding mine for 30 cents right along. It put my market to the bad, because they would say, "I can buy honey from Mrs. Merritt for 25 cents, why should I pay you 30? I find this is true, there isn't a grocer in Pekin but what handles comb honey, there isn't a grocer in Pekin that has bought a pound of honey produced locally. I say that is the greatest trouble, they will get their honey from the wholesalers and they are selling their honey at 35 cents, so we have three standards right there in our little town. If we had an organization there that could know how much honey is ready for the market, and could go to the grocers and say, we have this much honey to sell, will you take it? If they say no, we could sell it locally. All you have to do is put up a little sign. That I know can be done. The only thing to do is to get the right medium, the right advertising, and with the organization you will know how much honey there is to sell.

MR. COYLE.—I have found that one of the best mediums of advertising is to exhibit at the Fair. They have a good honey exhibit at the State Fair. A great many farmers come down from all over the State to visit the Fair. It would be very easy, it seems to me, for this organization to have a sort of a meet, along the line of selling, getting rid of your honey and the crop during that Fair, because a good many of us will probably be there, even if there is no meeting of your organization. The State association is all right for you fellows within 25 miles of Springfield, because you can travel in, but the fellow living outside of

this district doesn't know anything about the Illinois State Beekeepers' Association, but he will know something about it if you have a local organization.

If you have got enough men that will go out and work this thing up in the counties, why can't we have a get-together affair next Fair time and see what our results are, and perhaps the organization can have a speaker here, someone that knows something about the selling end if it. Maybe the Producers' League could give us a man on selling or bottling.

MR. TYLER.—It seems to me some of these California fellows don't know how to sell honey. They ship in honey here by the carload and sell it below our price. I bought five cases, two 60-pound cases of Idaho alfalfa, which is like the sweet clover honey, for 12½ cents.

THE PRESIDENT.—Do you know what that honey is selling for in the city?

MR. TYLER.—At the cafeterias it is 15 cents for two ounces.

THE PRESIDENT.—Do you know what comb honey is selling at?

MR. TYLER.—Twenty cents for a little square. It is the honey coming into our State in carload lots, and I think the beekeepers of the State of Illinois ought to get together in some way and take up that honey. If we can't supply the demand in the State of Illinois for honey, we ought to be a selling medium to sell that honey.

THE PRESIDENT.—That is a work which would take many men to take care of.

MR. COYLE.—The American Honey Producers' League has started out with the idea of preventing dropping in any one locality and I believe they are making a success of it, too.

MR. E. J. BAXTER.—It is only a matter of education and organization, that is all. When you succeed in organizing the people in Illinois and organize all the people in the west, you will have none of that trouble at all. The Colorado Honey Producers' Association doesn't sell any honey here, neither does the California Association, neither does Utah. I know for a positive fact that beekeepers in the Uinta Basin have been selling honey for five cents when the association has not sold a pound for less than 12 cents, but that is the individual beekeepers that do not know any better.

MR. WILEY.—This fall I was selling honey at 30 cents a pound, bulk, and comb at 35 cents in five-pound pails, to the store. I sold 7,000 pounds. A man from St. Louis and another from Evansville filled the town full of 10-cent honey and they quit me, and my last 2,000 pounds sat there till about a week ago. It is a thing we ought to take care of. If the fellow had got in there before I sold my crop he would have hurt me a good deal. Next year they will hurt me more.

MR. LOWER.—That is one reason I would like to see you folks belong to the National League.

MR. WILEY.—This honey brought in was some of it good, some bad, and some of it wasn't honey at all. But it was distributed among the customers that each one got a sort of different kind, so I think they are pretty well through with it in my locality.

MR. WILLIAMS.—In order to get this thing before us down to a business standpoint, I move, if it can be done at this time, that the Secretary be instructed to communicate with someone from each senatorial district in the State or county, as he chooses, with a view to organizing a local association to affiliate with the State association. (Seconded and carried.)

SECRETARY DADANT.—In order to get this clear, it isn't necessary in your county associations, as I understand it, to ask for $1.75. If you want to form your association with a membership fee of 75 cents, that is all right with the State association as long as you send 50 cents to us. If you only make it 50 cents a member and not keep anything in your own treasury, that is your business.

MR. WILLIAMS.—Don't make your fee too small, because if you do you are going to have some expense to pocket yourself. Make your fee large enough to take care of your local expenses, 50 cents for the State.

MR. KILDOW.—Don't make your expenses so high you will freeze out the little fellow, so be careful both ways. Get him in, get him interested, then you can raise the fees.

MR. COYLE.—Suppose we go home and investigate individually and find out that there are enough beekeepers in that part of the State to support a local organization, the thing to do naturally is to send out some cards or make a list of all the beekeepers, then we are going to have something to work on. Then we want some one that is from the outside. If we get a State association man at that meeting, all right, but can the association send a man?

MR. KILDOW.—When we are talking to an audience we want to talk bee inspection and education at the same time.

MR. COYLE.—Then I suggest, Mr. Chairman, that the members from different sections try to get together at the end of this meeting and have an understanding among themselves before they go home. I live considerable distance from the fellows in our section.

THE PRESIDENT.—The thing to do is do exactly what this man did. They formed their association. This association will affiliate tomorrow or the next day.

MR. COYLE.—We are in a section that is scattered. We have cities.

THE PRESIDENT.—There are mails, telephones and the trains. All you have to do is get your notices to the beekeepers and form your meeting. If you only have five, you can start.

MR. DADANT.—You can get your county agents to work with you.

MR. WILLIAMS.—There isn't a local paper in the State of Illinois but what would fall over themselves to get the notice to put in their paper that you are going to have a bee meeting at a certain place. You can get 10 times as many advertising in your newspaper as you can by sending your cards. We had people come to our meeting in Pekin, our first, from all over. All we did was to put the notices in the Peoria papers, the Bloomington papers and the Delavan papers, and we had a meeting there of 65. I wrote hundreds of cards and they paid no attention, but if you put a notice in the paper and get a reporter to write it up, a nice article, it attracts people at once.

MR. BAXTER.—While we have a State University man here, I want to reiterate something. There is no way of reaching the beekeepers of this State easier than through the farmers' institute, and if at Urbana they had one man who was a beekeeper and knew something about the business, and could go to these institutes and make a five-minute talk, like they send an agronomist, and at the end of his talk he would launch off into beekeeping, giving its advantages, possibilities, the amount of money that could be made, that would interest people, and it would do a surprising amount of good. That is the way to reach the beekeepers. We have thousands of young men going from the university to the farm, why not give them a knowledge of beekeeping and get the people enthused all over the State, then you will have no trouble getting members to your State organization.

MR. STONE.—I think they won't need any enthusing. As sweet clover comes in the honey producers will show up.

THE PRESIDENT.—About appointing a committee, I think that should be left to the Executive Committee. To appoint a committee composed of various members scattered all over the State, it is too hard to keep them together. But if the actual working force of your Executive Committee, through the Secretary, take up this matter with various men in each county, or every man here when he goes home if he has the idea to form a society in his county, let him write the Secretary anything he wishes to know. You will have no trouble. The only thing is to go out and form the county organization. If the county shows no life, have the Secretary, myself and some of the others stimulate the men in that district. The only thing is to do it.

MR. KILDOW.—I think we better leave it to the Executive Committee and the Secretary.

MR. WITHROW.—Before we adjourn, in all the bee journals there is a column devoted to Dr. Miller memorial fund. I wonder if it wouldn't be well for us to donate a little to this fund?

MR. WILLIAMS.—Mr. Chairman, I move that this association donate $20 to the memorial fund for Dr. C. C. Miller, to come out of the association funds in the hands of Mr. Seastream.

(Seconded and carried.)

Being no further business, the meeting adjourned.

G. H. CALE,

President of the Chicago-Northwestern Beekeepers' Association.

PROCEEDINGS

of the

Twenty-fifth Annual Convention

of the

Chicago-Northwestern Beekeepers' Association

held at

Chicago, Illinois, Hotel LaSalle

December 5 and 6, 1921.

PROCEEDINGS OF THE CHICAGO-NORTHWESTERN BEEKEEPERS' ASSOCIATION.

President, E. S. Miller, Valparaiso, Indiana.
Vice President, C. O. Smith, 5446 Cornell Avenue, Chicago, Illinois.
Secretary-Treasurer, John C. Bull, Valparaiso, Indiana.

OPENING SESSION.

December 5, 1921.

The meeting was called to order by the President and the minutes of the last meeting were read and approved.

THE SECRETARY-TREASURER.—Mr. Bull reported the following:

Cash on hand December 6, 1920	$38.48
Receipts from dues for the year	76.50
Receipts from assessments	84.60
Total	$199.58
Total expenses for year	197.86
Balance on hand	$1.72

On motion the report was referred to an Auditing Committee, consisting of Mr. Stewart, Mr. Bryant and Mr. Sievert.

THE PRESIDENT.—There was a Legal Rights Committee, of which Mr. C. O. Smith was chairman. He is not present Can anybody else report for him? (No report was offered.) Is there a report of the Price Committee?

MR. BULL.—I believe I was chairman. In regard to sending out price letters this year, we didn't have sufficient funds, so I didn't make up any prices. If you want to know why I didn't have sufficient funds, it was ordered last year that we have an assessment to take care of necessary funds. We still have $83.10 coming on those assessments.

THE PRESIDENT.—In regard to the Price Committee, I might say there was some question as to its legality. This committee was not supposed to set prices, of course, or to say to anyone for how little he should sell, but simply to recommend what a reasonable price would be. But I see recently the United States Government is doing that very thing in its semi-monthly reports to beekeepers. They are free and give prices not only from the wholesale dealers in our large cities, but also prices quoted by beekeepers themselves. One side of the sheet gives the dealers' prices, the other side gives prices quoted by the beekeeper, and every state in the Union reports the retail and wholesale prices. We get it every two weeks, so it really does the work the Price Committee has

done, and more. If you want these reports, send to the Bureau of Markets and Crop Estimates, United States Department of Agriculture, Washington, D. C.

The next is a paper, "Queen Rearing," by Jay Smith. Mr. Smith is not present, so I will ask Mr. Fracker to read the paper.

Queen Rearing.

(By Jay Smith.)

We all know that a vigorous young queen is necessary if the best results are to be obtained from the colony, yet do we *really know* it?

In a like manner, practically everybody knows that fresh air is necessary to good health, yet when we ponder over the fact that 160,000 people die annually from tuberculosis in the United States alone, and that 8,000,000 more are affected and will ultimately die from it, and that that dread disease is caused largely from want of fresh air, the question arises do people *really know* that fresh air is beneficial to health?

If the majority of beekeepers know that a young queen is so important they fail to realize the importance of it to the fullest extent, or if they do, they fail to practice what they know.

I believe if we all preach the doctrine of good young Italian queens, we will do more for the advancement of beekeeping than we can by any other means.

Personally I have always maintained that if a person kept as many as 50 colonies of bees, he should understand how to rear good queens. And if a person was in the honey business on a commercial scale and making a specialty of beekeeping, he should be expert at queen rearing and have all of the best literature on the subject and the best queen rearing outfit obtainable. I have visited beekeepers who numbered their colonies by the hundreds, who reared no queens, kept black bees or hybrids, and yet they were interested in finding some magical "cure" for European foulbrood, or were dreaming of some "locality" where the bees would gather more honey. If such persons would only in some way find out that it was the young vigorous Italian queen that he wanted, and then proceed to rear them, European foulbrood would cease to be a menace, and his "locality" would suddenly improve.

It is the simplest kind of a matter to rear queens that are just "queens." But to rear the *very best*—well that is a horse of another color. If one merely goes to a colony and removes the queen, cells will be started and queens can be reared, but if the colony is not strong and if the bees get no food either nectar or syrup, probably few, if any, of such queens would be good ones. However, if the colony is strong and a light honey flow is on and then the beekeeper culls out all small cells, very good queens can be reared in that manner. All grades of queens can be reared.

I have seen queens from the best down to ones so small that it was difficult to tell them from a worker, even upon close examination. I have found several of this latter kind in the past 10 years. They hatched in nuclei and they did not hatch in a queen cell, as none could be found. The virgin queen hatched from a worker cell, I presume. Such queens

are the same size as a worker and slightly different in shape and color. They always disappear before mating time and I never knew one of them to mate. My theory is that after the laying queen was removed and a cell given to the nucleus, the bees began to feed a number of larvae preparatory to making queens of them. Then when the queens came out of the cell that had been given them, they failed to remove the larva that they had been feeding royal jelly. Perhaps it had had so little jelly that the bees did not notice it. Then they went ahead to make a worker out of it, and the slight amount of jelly that this larva received in excess of what a worker larva should receive, caused it to take on a slight appearance of a queen. I mention this incident to show that all kinds and grades of queens can be reared varying in character and quality, from workers up to first-class queens.

An easy method of queen rearing is to go to a strong colony and remove their queen and all of the brood. Then give them a comb from your best breeder containing *eggs only.* If a honey flow is on the bees will at once begin to enlarge the cells even before the eggs are hatched and as good queens as the best can be reared in this manner. The cells are later cut out and given to colonies made queenless 24 to 48 hours previous. When only a few queens are to be reared, this is a very good method. However, I believe it will pay one to learn the Grafting Method originated by Mr. Doolittle as it has so many points of superiority over any other, where one is rearing even as small a number as 50 queens a year. Then again, if one is expert with the grafting method he is in position to rear queens in quantity when required and will be able to extend his beekeeping operations much better. Most beekeepers are familiar with the grafting process, so I will not dwell upon it here. To lift the larva out of the worker cell and lay it into a wax cup is a very simple matter. Good eyesight is necessary, but if one does not possess it, the grafting process may be turned over to some member of the family who has. The women folks are especially good at grafting, as their eyes are trained to do fine work, such as fine sewing and general needle work. The one doing the grafting need not necessarily know anything about bees or be able to handle them as the comb containing larvae and the cells are taken to the grafting house. As I stated, the grafting operation is simple, but the science of getting the bees in the proper condition to accept cells and properly finish them, is one that requires much experience. One should have everything in readiness as far as possible before the season for queen rearing approaches. I prefer the dipped cells as used by Mr. Doolittle. We use a bar long enough to hold 20 cell cups. Twenty dipping sticks working through holes in a frame made of tin makes it possible to dip 20 cells at once. After they have been loosened they are placed on the cell bar and a brush dipped in melted wax is used to paint the cells so they will adhere to the cell bar. This work can be done in the winter and have it out of the way of the busy season. The bars thus prepared should be wrapped up in paper to keep them free from dust, for the bees will not accept dirty cells.

When all things are considered, I believe that the swarm box is the best ever for getting cells accepted. This is especially good when the weather is cold or hot. The swarm box should be placed in a basement

or cellar in the dark, where it will be free from noise, light and sudden changes of temperature. I prefer a swarm box wide enough to hold five frames. However, only two frames are used—one at each side of the box, leaving the space in the center for the grafted cell bars. The swarm box is covered on the bottom with wire screen cloth and the box is made bee tight. We have found it most convenient to fill the swarm boxes at 1 o'clock in the afternoon and graft about 3 o'clock. A funnel is used to put the bees in the box. Best results are obtained by using from five to seven pounds of bees. If a light honey flow is on, all should go well. If not, the colony from which the bees are taken should be fed sugar syrup from two to three days previous to putting them in the swarm box. Feeding at the last moment seems to do little good. Of course, a colony must be strong in order to take seven pounds of bees from it and still leave enough bees to care for the brood and keep the queen laying. If the colony is not strong enough, it should be built up with brood from other colonies. The swarm box should contain two combs containing a little honey so there will be no danger of the confined bees starving. To be on the safe side, it is well to see that there is pollen in the combs also. It is well also to feed the bees with diluted honey while confined, but the feeding while they are in the box as well as the pollen is a very slight help, for I have tried them both with and without and sometimes I could not see that it did any good.

The important item is the feeding *before* they are confined. I have found that it brought best results to leave the bees in the swarm box for about 24 hours after grafting. If taken out sooner, the cells are not sufficiently advanced to warrant their continuance by the finishing colony. If left longer the bees seem to run out of royal jelly and the larvae are underfed. Some have reported good results by grafting without the use of royal jelly, but I never could get as large a percentage of acceptance, or as good queens when jelly was not used. For finishing the cells it is best to place them in the upper story of a strong two-story colony, confining the queen to the lower story with a queen excluder. This colony must be extra strong. If it is not strong enough, it should be given hatching brood until the two stories are crowded with bees. It is necessary to requeen these finishing colonies often in order to keep up brood rearing throughout the entire season and to prevent swarming. Swarming is very troublesome, for you cannot tell when they have the swarming fever till they come out.

One may ask, "Cannot you tell by their starting queen cells?" No, because they swarm on *your* cells and very frequently have no cells down in the brood nest whatever. For finishing, I usually give one bar of 20 cells to each colony. We usually get 18 or 19 cells accepted out of the 20 and the finishing colony usually finds another that for some reason or another they do not like and they tear it down, so we usually get 17 finished cells out of 20 grafted. Very frequently we get the entire 60 accepted and finished when all conditions are favorable. It is usually recommended for the honey producer to give a ripe cell to the colony to be requeened after having removed their queen 24 hours previous. This is a splendid method if one is cleaning up European foulbrood. If the colony is strong and has plenty of time to overcome the effect of

being without a laying queen for the time it takes for the virgin to hatch, this method is good. Personally, I much prefer to mate the virgin in a nucleus and introduce the laying queen, for in that case the colony is without a laying queen the minimum length of time. In the matter of nuclei there are as many varieties as there are beekeepers. My own opinion is to keep away from the baby nuclei. I have 100 of them in use—as playthings for the children and bird boxes, but for mating queens, never more. A twin nucleus each side holding two standard frames is hard to beat. Mr. Mendleson of Ventura, California, uses an eight-frame hive, divided into three compartments. He has entrances on both ends and one on one side, and while he is working with them he sits on the "blind" side. It would, indeed, be hard to beat a nucleus of that description.

THE PRESIDENT.—How many have ever tried the use of the swarm box in rearing queens?

MR. E. W. BROWN.—It works perfectly, and when the bees are without a queen for a few hours they are begging for the queen, and if you give them the means to raise one they will start in right there.

MR. MCNEILL.—I tried it last year, and it wasn't a very good year. I didn't have very good success with it. We didn't feed the bees as Mr. Smith speaks of, and while I got some accepted cells, I didn't get anything like the number spoken of here. I am expecting to try it again. I thought the feeding was necessary just at the particular time that you were doing the work, but if it is necessary two or three days ahead, that is probably a good reason why I didn't have good success.

THE PRESIDENT.—Mr. Smith told me the proper way would be to put a screen over the bottom of the box and make it otherwise as tight as possible so the bees couldn't get through. I know it is important that they be fed for a considerable time before the swarm box is prepared, and that they be shaken into the swarm box and placed in a dark, cool place. He leaves them there 24 hours. After 24 hours he puts each bar in a colony above a queen excluder. I imagine it would be better if we had no unsealed brood in this super where these cell bars are placed.

MR. HAAN.—What do you do with the bees after they get through?

THE PRESIDENT.—I think he puts the bees back in the hive from where he took them, and that he keeps them there only 24 hours.

MR. HAAN.—If the bees are left alone 24 hours in your swarmbox, then what is the use of worrying about bees in the hive where the bees came from? It is stated there should be enough bees in with the queen to keep the colony going.

THE PRESIDENT.—If you take too many bees away the larvae will starve in 24 hours.

MR. MCNEILL.—I think the main reason for the swarmbox is that instead of getting from 18 to 20 cells accepted, as has been usual under queen-rearing conditions, they get from 50 to 60. The ordinary beekeeper that we are familiar with is probably unable to use 50 or 60 queen cells at one time. If I want to get 18 or 20 cells I take a good strong colony facing south and face it east or west and put in its place an 8-frame hive with one or two frames of honey and pollen, and go through

the colony I have turned around and find the queen and put her to one side. Then I shake nearly all the rest of the bees into the new hive, but don't put any brood in.

All the field bees are coming into your new hive and they are bringing in nectar if there is any. Do this at one o'clock and put your grafted cells in at about three o'clock in the afternoon, on one or two frames. I think I can get more accepted on two. Leave them there 24 hours. Take your cells out which are started, put them over queen excluders in strong colonies, for finishing, take your 8-frame hive up, put the queen back in the old hive and put the hive back where it stood, and you are through. You have 18 or 20 cells that are just as good as these formed by the swarmbox, with considerably less trouble, and you have a number of cells which you can use and not waste.

THE PRESIDENT.—A very good plan, I think. Where one needs only a few cells, sometimes you can do it this way. In the swarming season if your colony is strong, place some of the brood above a queen excluder, cells are nearly always started and in ten days will be ready for use.

MR. STEWART.—When you put up that comb, is it not a good plan to put some royal jelly in with it?

THE PRESIDENT.—The bees feed royal jelly to the larvae for the first three days. It is already in there.

MR. STEWART.—Would you feed during that time?

THE PRESIDENT.—I don't usually try to rear queens unless there is nectar coming in. If you wanted to rear them at other times you would have to feed. I don't claim to be an expert queen breeder, although I rear a few every year.

MR. JOHNSON.—I would like to say I have spent many an hour in Mr. Smith's yard. He is a man that raises lots of queens, and he does everything systematically. He does his grafting on one day and he works in the basement another day, which are all certain days. He knows just exactly what he is going to do every day, he has it all planned out. In mailing queens I have watched him put them in the mailing cases, and if there is a queen that isn't laying just right and doesn't look just right, he pinches her head off and lays a little block down so he knows just what he wants to look for, the next time.

MR. E. L. MOULD.—Does Mr. Smith hold entirely to the three-banded queens?

MR. T. C. JOHNSON.—Mr. Smith doesn't advertise or sell golden bees at all, but they are about as yellow as you can get them. He started with a yellow bee and he has been breeding for quality ever since. He doesn't advertise what he calls a golden bee at all. They are just yellow Italians, and some of them have a very slight black tip.

THE PRESIDENT.—Do you know whether they are cross like some of the goldens we get from the south?

MR. JOHNSON.—They are very gentle.

THE PRESIDENT.—Some of the goldens are crossed with the Cyprian stock, and are very cross. If there is no further discussion of this, we have with us Mr. T. C. Johnson, State Inspector of Indiana, who has a few words for us.

Getting Rid of Foulbrood.

Mr. T. C. Johnson.—Mr. President and fellow members: I am certainly pleased to be with you for once. I have made plans for the last ten years to attend this Northwestern Association, but have never had the privilege. Last year I was to be here, and at nine o'clock in the evening when I was all ready, I got a long distance call to take care of the office while two of our men attended the convention.

I didn't come here with the intention of having anything to say, but I am very interested in beekeeping, and that is one reason why I came up.

Lots of farmers keep bees. There are many of them that have no more use for a beekeeper or a bee law than people who never saw a bee.

Although sheds are good protection from winter and summer sun, they are difficult to work under.

The first thing I would like to see is the hand of everybody that thinks we can keep bees successfully without a State law or any protection whatever from the State.

Mr. Wheeler.—I do for one.

Mr. Stewart.—I do. I have no use for them under the sun.

Mr. Wheeler.—That isn't my idea at all, but I think I can get along without an inspector as I have done in the past.

Mr. Johnson.—That is not a majority, so I will go ahead with my talk.

As far as I am concerned, I do not need an inspector, but how am I going to get rid of foulbrood if my neighbors have it? How many times will a good colony become diseased if there is foulbrood around it? If they discontinue State laws, they take my business away. That is the way I look at it, and I think others have had the same experience.

I clipped an article from a paper yesterday, that I want to read you. I have been a farmer all my life, and I think a lot of the farmer, and I know he has reason to kick on a lot of things but I don't believe anybody would make the contention this man has made if he knew anything about bees. This man has fruit on his farm, but he doesn't do anything. He can go out and tell how and when it ought to be done, although he didn't do anything himself. He is paid for it. Last week I was sent down to Indianapolis to represent the farmer, and after I came back I saw this little article in the paper, where he spoke these words at the Farm Bureau:

"Would Abolish Several Offices—John Cantley says State and counties should shave expenses to the bone. The abolition of what he termed all non-essential officers was advocated at a meeting of the Washington Township Farm Bureau. In these officers he included the county agent, the inspector of weights and measures, the State bee inspector, and the county road superintendent. The talk of Mr. Cantley was on retrenchment in State and county expenditures. He said that everything should be done to keep these expenses down during the present, so that taxes will not be higher than is absolutely necessary."

Is the office of inspector a non-essential office? Can we keep bees without a bee law or a bee inspector? If so, let us get rid of them as soon as we can. I don't think we beekeepers should allow them to get rid of them, and as far as the county agent is concerned, I say it is one of the best things we have had and I don't think any State ought to allow it to go.

It doesn't matter how good a law we have in Indiana for bees, if our neighbors have disease we have it. I am going to attend every township meeting in my county this winter if possible, and give a talk on bees, what they are good for, how to take care of bees, and I am going to tell them we need bee inspectors. I feel we do need them. If I am wrong, I want to know.

THE PRESIDENT.—I think the bee inspector should enlighten people as to the necessity for eradicating disease. I don't think we can get along without a bee inspector or a county agent. I am a farmer, and I believe the county agent is doing a great work. A few years ago in our county its was voted not to have a county agent, but there was such a noise made about it that next year they elected a county agent and they have had one ever since, and he has been growing in favor all the time. The farmer that cannot see the benefit of the work done by the county agent or the State inspector must have his eyes pretty close together—he can't see very far. These men are doing a great deal of good in Indiana, and I am sure they do in Illinois if they do their work. I am confident every beekeeper of any importance in the State of Indiana will uphold the inspectors.

T. C. JOHNSON.—We know that the farmers outnumber the beekeepers in all the states; and when we get about two-thirds of all the little beekeepers against us we have got to be awake.

MR. E. L. MOULD.—I don't think the little beekeeper is as liable to be against these things as the big beekeeper. The man with a lot of

experience is more liable to think he can go alone than the little fellow. I have had only several years' experience; I need this help. I am very much in favor of it.

THE PRESIDENT.—As an illustration, one of our Indiana inspectors came up to my yard and looked me over once. He said to me, "You keep up-to-date in most things, but there is one thing you are not up-to-date in." And he just gave me one idea that has been worth more than a thousand dollars to me inside of two years. A bee inspector can do a great deal of good besides pointing out foulbrood. He can carry from one beekeeper to another the best things he sees, and points of great value. Mr. Johnson mentioned one thing to me. He said, "When you shake bees or hive a swarm, to prevent stretching the foundation put an empty hive body under it and the bees will attach themselves to the bottom bars and will not stretch your foundation. It is these little points that are valuable to us.

MR. STEWART.—What was the inspector's idea that he gave you?

THE PRESIDENT.—He said, "You are making a mistake destroying all these combs in treating European foulbrood." Before that they said destroy the combs, burn out the hives, as for American foulbrood. All you have to do is to make colonies strong, requeen and use Italian stock. In that way I have cleaned up all my European foulbrood and saved many combs.

MR. J. C. WHEELER.—I would like to ask a question about the Italian bees. Do the Italian bees keep foulbrood out of Italy? They don't have any German bees there, do they? There is a great talk made, advertising Italian bees. I would like to know if anyone knows if they are any better in eradicating foulbrood than black bees.

THE PRESIDENT.—Mr. Johnson, will you answer the question?

MR. T. C. JOHNSON.—I don't know anything about Italy at all, but I know Italian bees are better to keep out foulbrood than the other kind. Probably they do not have foulbrood in Italy, I do not know, but I know they are all right for use here. You are talking about European —that has got nothing to do with American at all.

REGISTERED BEES.

MR. HAAN.—Mr. President, I have been thinking this situation over, and I think where we have inspectors if we could get appropriations from the State necessary, I think we should have men going around to examine every hive everywhere within their jurisdiction, and anybody that has even one colony of bees should be registered somewhere, and his bees inspected every year at least once, I think. A great many beekeepers diagnose the hive from the outside and they do not really know what is going on inside. They let the colony go along, never looking on the inside, and the first thing they know the colony is dead. The neighbor bees rob it out. If we look in the colony afterwards we find it is rotten with foulbrood. What are the neighboring people going to do on account of these ignorant men? That is why I think every colony should be registered somewhere in the State and in-

spected at least once a year by an authorized inspector; but just calling in an inspector every now and then when you think you want a little advice or help, that is not getting at the bottom of the trouble or stamping out the disease.

THE PRESIDENT.—I think it is a question of getting appropriations. I think Mr. Haan is right if we can get the money to do it. In addition we have had in the past, three bee inspectors to cover the whole State. The appropriation allowed by the last Legislature was considerably increased and I understand we are to get more next year. In my county every colony was inspected except a very few, which we were unable to find. Mr. Johnson came up there and we took him around to every beekeeper we could find in the county. The second time he came around to see whether or not they had carried out his program, and he found in almost all cases they had done so.

MR. JOHNSON.—How do you think we are going to get along without the inspector? What we want is more of them. I keep my bees clean, but I can't watch everybody's.

I have seen five swarms of bees put in the same hive on combs so rotten that the moths wouldn't touch them.

MR. KANNENBERG.—I can talk from experience on foulbrood. I never had the inspector come to investigate my foulbrood, I sent my samples to Mr. France and he sent it back and said it was foulbrood. We had a man three blocks away from me, who got the bee fever. He said he was going to make diamonds out of bees and he bought all the bees he could get, wherever he could get any. He got as high as 25 swarms, paid a man $75 a month to look after his bees, and when he came home (he hadn't given up his job yet) he started in with the bees. He stirred them up in the evening. The result is today he has got about four hives. I had over 125 hives, lost 45 hives in one season. It cleaned me out, left me none. I started up again last year. I didn't have any for a year, because I thought what was the use of keeping bees when my neighbor had foulbrood and he didn't clean it out? So I started in again, bought some nuclei and I had quite a lot of trouble getting started. First the bees came and the queen was dead. They sent me bees again and they were dead. I got a couple of pieces of comb from somebody who had bees, and raised my own queens. It was too late for the bees to get a start and I fed them, but they died the next spring. I didn't have to go out to the hive and look in it for foulbrood, I could smell it when I got in the yard. That is the experience I had. Nobody can fool me on it; I can smell foulbrood in any yard.

MR. WHEELER.—I am afraid we Illinois beekeepers and our inspectors may get a black eye, but we have no kick coming from our inspectors. We have two new ones appointed this summer. We think Illinois has as good an inspection corps as there is in the country. From the little word dropped here you might think we are complaining, but I, for one, am not complaining. We have got good men. A couple of years ago I had eight colonies. I found something was the matter with my bees and sent a sample to Washington. They reported American foulbrood and said I had better have the inspector. He spent a day with me and I know now where the American foulbrood is. Today

I have 31 colonies and they are all healthy and a great deal of credit is due the inspector coming to help me with information as to what it looked like and how to take care of it.

MR. MACNEILL.—It would be interesting, I think, if we could have reports from different beekeepers as to their honey production this year, from the different sections, the average per pound from their colonies and the maximum and minimum yield.

MR. KANNENBERG.—From one colony I got 325 pounds of honey. (Applause.)

THE PRESIDENT.—How far south are you?

MR. KANNENBERG.—I am in Oak Park. I have sweet clover.

A MEMBER.—I had 85 pounds per colony in Naperville from 20 colonies.

MR. SIEVERT.—I got an average of about 65 pounds. I had a lot of nuclei.

THE PRESIDENT.—Mr. Bull, how is yours?

THE SECRETARY.—One hundred ten pounds to the colony.

THE PRESIDENT.—I would estimate my average at about 100 pounds.

MR. E. W. BROWN.—Mine is about 250 pounds per colony for 50 colonies. I am 18 miles west of Chicago.

THE PRESIDENT.—You have the sweet clover, also.

MR. MCNEILL.—What was your best colony?

MR. BROWN.—A little over 300 pounds.

THE PRESIDENT.—Around Chicago and south and west of Chicago I understand there are large quantities of sweet clover. That is something we don't always get in other localities.

MR. E. W. BROWN.—We have basswood and clover also. Everything yielded this year.

MR. WM. BIEGEL.—I got four two-frame nuclei from the south May 1st. I am on the south side in Chicago, and they made about 50 pounds to the colony and one swarm.

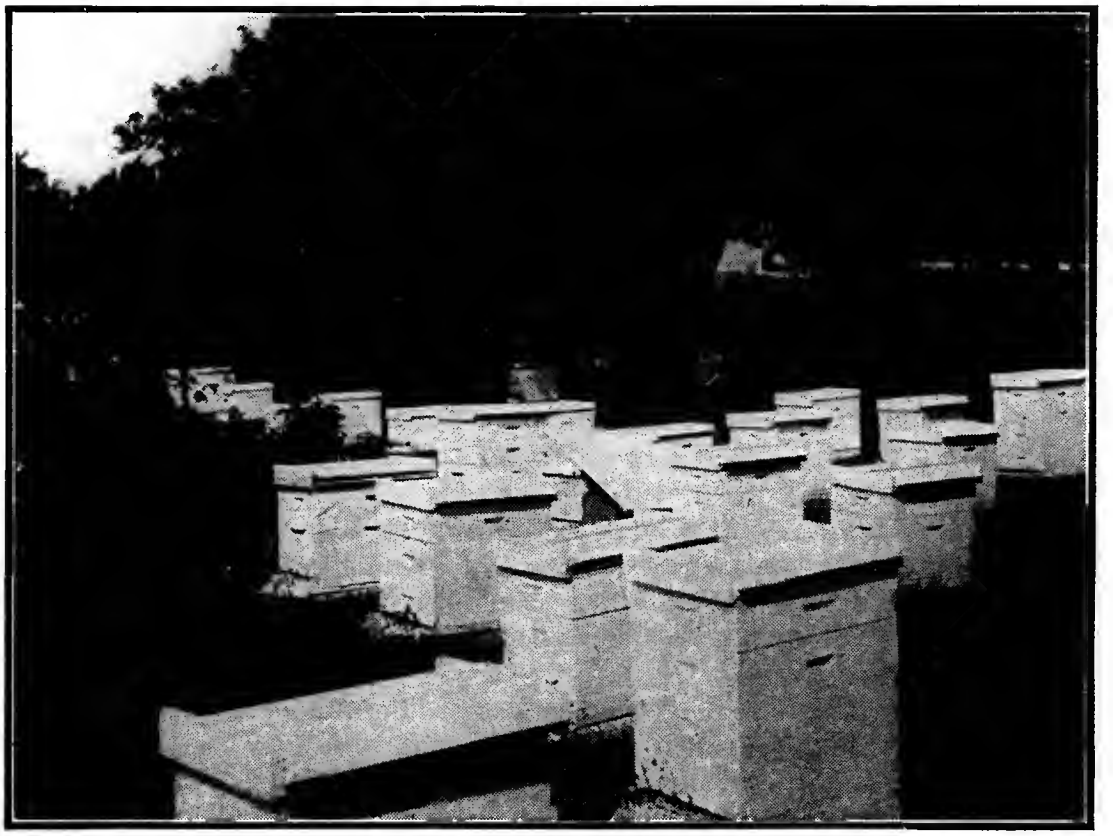
MR. MCNEILL.—I had 95 pounds for the average from 80 colonies. I have profited by other beekeeper's mistakes, and I have sent on the good things that I know, to others. I thought I was doing pretty well, but when I hear of this 250-pound yield I am going to get busy and see if I can't do better.

THE PRESIDENT.—I might say north of here, in Michigan and Wisconsin, they had a fair crop of white clover this year. I was up that way last week. Quite a number reported large crops of alsike honey in north Wisconsin. Southern Wisconsin was not so good. Wisconsin was not as good as Michigan this year. In Canada, Mr. Holtermann reported a crop of 85,000 pounds, something like 250 pounds to the colony, I understood. Their locality for alsike and white clover is much better than ours. Some of us around Chicago get sweet clover. A large portion of my crop was golden rod.

Hubam Clover.

The President.—We have a few minutes for the discussion of the Hubam clover. Who has had any experience with it?

A Member.—I got an ounce of seed last spring and I got about seven pounds from it. The bees seemed to enjoy it. I want to go into it a little heavier next year, and cultivate it. The papers advocate drilling it three feet apart, but I think 18 or 20 inches would be plenty. On a larger scale one wouldn't do that. I harvest the seed by hand. I want plenty for myself.



A well kept Apiary at Morrison, Ill. Chas. G. Macklin is the owner.

A Member.—I got a sample of the seed, perhaps 50 or 100 seeds. I planted it in the garden and I had blossoms in six weeks. It has certainly got it over the biennial clover. As soon as it blossomed, the bees worked on it.

Mr. McNeill.—You don't seem to get much out of yellow sweet clover.

MONDAY AFTERNOON SESSION.

The President.—Gentlemen, will you please come to order? We will have the subject, "The Bee-Tight Honey-House and Other Popular Fallacies," by Mr. S. B. Fracker. While we are waiting for Mr. Fracker the chairman of the Auditing Committee has requested that we hear his report.

MR. STEWART.—We have examined that account and find it correct in every respect as represented.

The report was accepted.

THE SECRETARY.—A question has been asked about the journals. With the dues the American Bee Journal is $1.25, without it is $1.50.

MR. WHEELER.—Then what are the dues for this year?

THE SECRETARY.—At the present time they are $1.50 if you do not change them.

QUESTION.—Is there not some provision which secures the A. B Journal if ten or more members subscribe? I am pretty sure you can get it for a dollar.

THE SECRETARY.—You are sure it is one dollar?

THE MEMBER.—Yes.

THE SECRETARY.—Then I will take one dollar for it instead of $1.25.

MR. KANNENBERG.—Does this include the State fee also?

THE SECRETARY.—It will if we vote to join the State. That has not been done as yet.

MR. HAAN.—I was always under the impression, that we were members of the State Beekeepers' Association.

THE PRESIDENT.—We have been joining every year.

MR. HAAN.—Then by paying our dues here we are members of the State organization.

MR. KANNENBERG.—I make a motion that we join the State Beekeepers' Association.

MR. SIEVERT.—Second the motion.

MR. E. W. BROWN.—What does that cost?

THE PRESIDENT.—One dollar and fifty cents, as I understand it, covers the fees of both associations.

Motion made and carried that this association join the Illinois State Association.

THE BEE-TIGHT HONEY-HOUSE AND OTHER POPULAR FALLACIES.

(By S. B. Fracker, Wisconsin State Entomologist, Madison. Wis.)

I was rather hoping that we would have a full sized apiary inspection law debate this morning. It looked as if it was going to start for awhile, and I was rather disappointed because it didn't develop. I am sure we could have all gotten into it and there would have been some interesting things to say. Perhaps we can have one this afternoon, as soon as I get through with the few remarks I have to make regarding the subject as announced.

The intention in giving the subject as printed on the program was to tell a few stories of the troubles that beekeepers have, and their success in overcoming those troubles, rather than develop facts and figures or to try to put over any sort of a proposition. In other words, we will simply talk over the things that happened in individual cases and then try to add up these stories to be placed in something like statistical form, to see whether we have developed some results by the Wisconsin

method, which possibly may be different. Those may not be as encouraging as we had hoped, nor as disappointing as we had feared, but may be different from those developed in other states.

A letter came to the office the other day from a county inspector, which told a story something like this: I was at Mr. Blank's apiary the other day, and found that last spring in his yard of 55 colonies he had a large number of cases of American foulbrood. He was familiar with the treatment, consequently he shook all the colonies and put all his infected material inside his bee-tight honey house until he could finish the spring farm work. His sister looked out of the window one day and wondered what the bees were doing, and called her brother in. They proceeded to investigate, and they found that the bees were securing access to the honey-house through the keyhole of the door and getting out through the bee escape in the windows. That evening they investigated further and found nearly all the infected honey from inside the honey house was gone, that the combs were nearly dry. The result was that this gentleman applied a treatment again this fall, and not only had the loss of two sets of combs throughout nearly his entire yard, but practically a loss of the honey crop besides. In addition to that he had to feed the colonies treated the second time, because there was no honey flow.

This thing happens so many times. Beekeepers treat so many times without securing freedom from disease, that Mr. McMurray, who was our first apiarian inspector, said the other day, I can't recall a single case during the last three years in which I have been connected with the Wisconsin work, in which a beekeeper has eliminated foulbrood for himself in a yard by using the shaking treatment. Any of us can clean up a colony, but, he said, I cannot remember a single case in which a beekeeper has cleaned up a yard and freed it from foulbrood by the shaking treatment. Neither of which in thinking it over could answer the question definitely, consequently I went over the record of the principal counties in which we had been doing area clean-up work, to see if his idea was correct, that the beekeepers are not securing complete results by the shaking treatment.

The contention was that only those who destroy their infected colonies eliminate disease from their yards. I found it was not a correct idea, that in four counties we had rather accurate figures, showing whether the owners of infected yards did treat their infected colonies or destroy them. The figures on which these results are based include the inspection of something like 1,400 yards this past season and smaller numbers the previous year, this year totaling altogether more than 24,000 colonies.

By looking at figures of this size we can probably reach a more accurate conclusion as to the proportion of beekeepers who can treat or destroy successfully, than we could if we were looking at individual cases around a single town, or if we were looking at particular areas in which the beekeepers had asked the inspectors to come and visit them.

The results in these four counties show there are 163 yards in which we know whether the beekeepers treated or destroyed their in-

fected colonies. Of those 64 applied the treating method, while 99, or a somewhat larger number, destroyed their infected colonies.

Looking at that 64, a record we have over a period of three years, in some cases four years—we find that less than half of them did succeed in freeing their yards from disease, but that in these four counties during those four years 27 beekeepers applied the treatment method and freed their yards completely from disease.

MR. WHEELER.—Will you tell us the difference between the treatment method and the shaking method? We don't know the difference.

MR. FRACKER.—I am using them synonomously.

MR. MCNEILL.—You spoke of the treating or shaking method, and destroying the colonies. Do you mean destroying bees and saving nothing?

MR. FRACKER.—Yes, sir. There are some beekeepers, particularly small ones, who would rather destroy their infected colonies sometimes. If they only have two they would rather go out of business than go to the trouble of treating the infected colonies, while there are others who prefer to apply the treatment. The second class, those who destroy infected colonies rather than treating them, are largely beekeepers who have just a few each year.

The average beekeeper as we take them, yard by yard, was not able to use the shaking treatment successfully, and free his yard completely from disease. By freeing it from disease I mean entirely as based on an inspection the following year after a treatment has been made. It is easy enough to reinspect within three or four weeks and say the yard is clean. A yard is never considered clean with us until it shows itself free from disease the following season.

The inspectors usually do not treat except where requested for the purpose of assistance. They give demonstrations of treatment when they can secure the attendance of the beekeepers.

Of the 99 who treated their bees it was natural that some of them went out of the bee business because that included all who had only one colony and didn't care to treat bees, consequently 27 of them we find at the end of the third year period were without bees. Forty-seven or about half of them came through at the end of the period free from disease, and only one-fourth showed up disease at the end of the three-year period.

In other words here are 26 apiaries, 26 beekeepers who are destroying their infected colonies as fast as they find them, still at the end of the three-year period the inspector goes in and finds disease in these yards. There must be a reason for this, and this talk is directed toward finding the reason. Beekeepers treat for disease and do not clean up, and infection appears the following year and they often destroy infected colonies.

Disease appears the following years. Infection may come in from the outside. Where the buying and selling of diseased supplies is shut off as completely as it is in Wisconsin, that isn't a very serious matter. The State law prohibits the sale of any bees without a permit from the State inspector, and that is being followed out by beekeepers to a limited

extent. Since we visit as many as 1,500 yards a year, it would be easy for us to discover whether that regulation were being violated to any great extent. Under the Wisconsin statutes a man cannot sell to his neighbor without a permit or inspection certificate from the State inspector, so that the first and most common method of securing disease in your yard, which is by the purchase of diseased material, is practically cut off under our conditions. Up to four years ago when this law was put on the statute books, that method of securing infection was much more common than any other. It ran beyond any other method of securing infection. It was much more common than bees going out and robbing diseased honey from some neighbor's yard and thus introducing it. Charts showing that fact conclusively have been published in various papers and the matter has been discussed before the various organizations.

The question now confronts us, why is it that 59 of these beekeepers in four counties, when they were no longer purchasing diseased material, were still being subject to infection of American foulbrood? The story with which I began this talk, that of the gentleman in Green County who had the trouble with the bees robbing out honey by going in through the keyhole, we found repeated again and again in various ways. For example, an old German beekeeper in the northern part of the State was observed one day to sit absolutely motionless, looking at his honey-house. A friend came up behind him and stood watching him. He couldn't see that the old beekeeper was moving at all, except just puffing on his pipe. The friend touched him on the shoulder and asked how he was, indicating surprise that he was sitting there doing nothing at all. The beekeeper said, "Well, I was just trying to figure out how the bees got in the honey-house." The friend looked through the screen door and the honey-house was full of bees. The window and the door were screened. You have probably seen similar situations when the door has been standing open.

This man had two-thirds of his yard infected with disease and he was storing the diseased combs after treatment. He wanted to know how those bees got into a honey-house that was screened and bee-tight as far as he could tell. They went into the honey-house and looked all over, and couldn't find any way for the bees to get in. The beekeeper has a heating system in there, with a stove pipe running to the outside, large enough for every bee in the yard to come in in a very short time. Being a dark way, they were unable to get out, and the only way they had of getting outside was when he left the door open.

There is another case. If I didn't have the accurate story of a man who had actually seen the case himself, I would hardly believe it. The introduction is almost the same—a honey-house full of bees without any apparent means of entrance. No going through the keyhole, no heating method, and yet they were continually appearing inside the honey-house and often were unable to escape. They didn't succeed in figuring out any way from the outside by which those bees could get in, but in happening to look down one of them saw, almost in the center of the cement floor of the honey-house, a bee crawling through a crack in

the cement. They didn't understand it. There was no continuation of that crack to the outside, so they went outside to look. They discovered that the floor of the honey-house had buckled, leaving a wide crack in the cement. By means of instinct the bees came up on the inside. Naturally, they couldn't find the exit.

We are inclined to believe, when we see incidents of that kind, that there is no bee-tight honey-house. The storing of infected honey and supplies on one' premises is just as dangerous to the profits of the beekeeper as leaving the body of a hog which has died of hog cholera in the barn would be to an Iowa or Illinois raiser of corn and hogs. The storing of infected material can destroy the bees and can result in continual reinfection in a place where some bees, at least, are sure to get at it. In many cases the honey-house is not nearly as tight as those in the illustrations given. There have been plenty of times when a beekeeper has said, "My honey-house is perfectly tight," and there would be a pane of glass missing or cracks in the siding a half inch wide. We are inclined to believe the beekeeper under these conditions is forgetting three things. These do not appear in the directions for treating American foulbrood at all, but it is assumed that every one knows them: first, that bees will go after honey or sweets wherever it can be found, if at all within reach; second, that the bee is a very small animal which can go through a hole one-fourth inch across; and, third, that the germ which causes the American foulbrood, Bacillus larvae, is so microscopically small in size that the most minute, next to invisible drops of honey, even when they are dried up in the comb, may contain the disease.

The 59 beekeepers mentioned, who had maintained disease in their yards throughout their best efforts to treat and destroy the colonies, included a number of prominent names. In fact, even down here at Chicago, if I should put up a chart and write the names of those 59 beekeepers, there are many names that many members here would recognize. They are not the small beekeeper.

I was very much interested in the remark this morning by the gentleman who said that a newcomer in beekeeping was anxious to support the apiary inspector because that has been so universally our experience in Wisconsin. Of those who have treated three successive years still having disease, there were only two yards in the whole group with less than ten colonies of bees.

When beekeepers get together in associations they are almost always those who own more than ten colonies of bees. They are the large commercial beekeepers of the region, and nearly always this is passed back and forth, again and again: "If it wasn't for the little fellow next me, who maintains disease, I would be able to keep my apiary free." Our experience indicates that the reverse is true, that the man with from 30 to 100 colonies has a harder time to eliminate disease from his yard than does the man who has from 1 to 3 colonies. In the first place the latter has nothing to lose and if he has disease among his bees he is willing to destroy the infected colonies.

MR. WHEELER.—What does he do with his combs and hives when he goes out of business?

MR. FRACKER.—If he isn't caught at it, they will go back of the barn. There is an interesting sidelight on that. This year the apiary inspectors have had to clean up four big yards in which the amount of the infected supplies was so great that they could not be piled behind any ordinary outbuilding. I happened to have the pleasure or discomfort of helping in the process of cleaning up one of those cases myself. The others were done by men sent out special. One of the largest beekeepers in each of the four different counties had either an outyard or a large number of supplies on his premises.

The one particular case in which I helped, a certain commercial beekeeper's outyard (a prominent member of his local association) had been permitted to die during a certain season. His outyard had been overlooked by the men who were doing the clean-up work in that neighborhood. In spite of his information on the subject that yard was permitted to stay there. The lids were off. The yard was in an unbelievable condition of abandonment. Combs were strewn about everywhere, hives were on end with infected combs in them, every time it rained there would be American foulbrood scales get soaked up, and just a few bees from the neighboring yards would come to pick up some of the sweetened water. Under those conditions it was impossible for anybody in the neighborhood to clean up.

MR. WHEELER.—What did you do when you took it in hand?

MR. FRACKER.—Packed up the wax. We had his assistance. The inspectors didn't have to do it entirely. We had his personal assistance. With his assistance, we cut out all the infected wax and comb out of the frames, burned up the frames, scorched out the hives, and thoroughly cleaned up the ground which had been rather well covered with broken comb and sterilized it first as far as we could.

MR. WHEELER.—But you did not burn the hives?

MR. FRACKER.—No. We burned nothing whatever except the frames, the lumber on which some hives had been resting, was piled up to one side for him to carry into his basement for use as fuel for the winter. The hives were good if he was willing to go to the trouble of scraping out some of the charcoal. The wax could all be sent to a foundation factory, permit for which was promptly sent him.

The excuse that several beekeepers have used has been this: "The thing got away from me at the time, I should have looked after it. I didn't have time to do so, and I thought that as long as the honey had been robbed out of this comb that there wasn't any hurry about it." So old comb of this kind has been left in the rain to have the Bacillus larvae, which causes American foulbrood, soaked up again and again under conditions on which bee diseases could be distributed.

In the entire eastern part of the State we are now using the area clean-up method, an area totaling altogether 22 counties. Not all have bee diseases. About a dozen of them need close yard to yard work. Out of this entire eastern section of the State one county has not yielded satisfactory results. There is one county in which the disease seems to be proceeding in a way that it shouldn't. There are three or four reasons for this, one of them is the fact that the beekeepers in that county are infected with the germ of apiary economy. As someone has said,

beekeepers are very affectionate-minded men. They like the flowers and they like the bees, they like the bright sunny days, they like attractive ladies, they like sweets, but there is one thing that the beekeeper likes above everything else on earth, and that is a piece of old comb. In this particular county the beekeepers are affected with that germ of economy to such an extent that the county has had difficulty in freeing itself of disease.

There are two attitudes one can have in cleaning up disease. One is this: "Here are a half-dozen frames, maybe two dozen frames. I am not sure they were on the infected hive. I have got them mixed up in some way. I believe I will run the risk and put them on a clean colony, and if that colony gets diseased I will know they were infected and I can destroy them." The other is this: "Perhaps those frames were on an infected colony. I have mixed them up in some way. I will just be on the safe side and eliminate them." When a single beekeeper or a group of beekeepers or a whole county full of beekeepers is persuaded with one idea or the other, they are either going to maintain disease or clean up disease in the proportion to which that germ of economy affects them.

In addition to the bee-tight honey-house fallacy, the idea that we can have a building in which we can store germs—for that is what we are doing when we are storing infected honey—there are several other things that we occasionally run across. In Langdale County, one which has been practically free from bee disease so that we didn't know of a single case, suddenly an infected yard was moved in from the outside and not caught soon enough, resulting in five new infections, which have since been cleaned up. One of these beekeepers had gotten disease in one way or another—probably his bees had robbed out some honey from this infected yard, which had been brought in—one colony out of four was infected with disease. We were having a beekeepers' meeting in that county and the inspector suggested that I go out with him and visit these different places where they had cleaned up this year, and see what we thought the chances were of their being free from disease another year.

In this particular case we visited, the hired man said the bees had been thoroughly treated. The infected material was stored in the woodshed and we promptly pointed out that that woodshed was not bee-tight. It had a door standing open, and the window had no pane in it. He said, they are piled up in such a way that bees can't possibly get at it. He said, "We have them piled on a board three bodies high, with a cover on, and no bees could get in there at all." It seems almost laughable. We went in and found that one of those hive bodies had one corner sitting on the two by four, and there was a space at least two inches high around two sides, the base of that hive in which bees could get in and up to the infected supplies. Naturally there was no infected honey left. It was another case of expecting to harbor germs on one's premises without paying the penalty.

MR. WHEELER.—Would you mind telling us the instructions you gave those beekeepers?

MR. FRACKER.—The only reason that I hadn't done that so far was because I thought perhaps the association would be more or less bored by something that is undoubtedly repeated each year.

This season mimeographed instructions are left with the beekeeper, instructing him in the shaking method of treatment. The instructions give two different options to the beekeeper. Either he can shake the bees by the usual methods, on to full sheets of foundation, or he can brush them on, using a particularly long whisk broom rather than a bee brush, brushing them from the infected comb into the new hive placed on the old location. If there is nectar in this diseased colony or a honey flow at that particular time, the bees are shaken on newspaper, usually in front of the hive, and the bees allowed to run in, rather than being shaken directly into the hive.

This refers to just the diseased colonies. It is only rarely that an entire yard is shaken in that way. Once in awhile it is.

The optional method given is that of placing a frame of drawn comb in the center along the frames of foundation and then removing it next morning, but that optional method is never emphasized, owing to the fact that that drawn comb will do very much more damage than good if it is left in more than one day, and we are afraid it will be left in more than one day.

It would be possible to give a talk wholly on American foulbrood and its treatment. We are discussing some of the other aspects of the problem this afternoon, and if any of you have questions along this line, we will be glad to discuss with you, any of the details of the methods of treatment, or of the symptoms of the different diseases.

Another instance in this same county was that of a gentleman who had read the instructions for treatment, apparently carefully, but he had neglected to note one thing. After a talk on the symptoms and treatment of bee diseases, he came up to one of us and said, "I am not sure that I am doing this thing exactly right. I had six colonies of American foulbrood this year, let me outline the method I am using and we will see whether I am making progress, so that I probably won't have any disease next year." He described the usual method of moving off the infected colony a few feet and putting the clean hive in the place where the infected colony had stood. Here was a comb honey producer, taking off the comb honey supers and setting them to one side while he shook the bees into the clean hive, taking the brood frames and the hive body in which the brood had been reared away and either destroying it or putting it carefully under cover, setting back his supers of comb only on the new hive into which he had shaken the bees. Of course he was immediately putting infected honey back on top of the bees which he had just shaken, giving them the finest chance in the world to feed that honey back to the brood that would sart in their new hive. He couldn't have freed a yard or a colony of American foulbrood in that way in a thousand years, because he had overlooked the fact that the germ of American foulbrood was in that comb honey super, and he was placing it back on the same hive.

The trouble with the treatment method is not in handling that particular colony, but in the handling of the diseased material after it is taken away from the infected colony, storing it in the honey-house, saving it behind the barn or woodshed in the way mentioned, being at some place at which bees have easy access to it, although it may appear to the beekeeper to be bee-tight.

Another instance. A man who had had no previous experience with disease, a beekeeper who had been fortunate enough to maintain a yard of 115 colonies in an area which had several large apiaries with considerable amounts of disease. He knew the conditions. American foulbrood didn't appear to him to be particularly serious, because he had never had it in his own yard he assumed it would remain free. Last fall, a year ago, after the basswood flow in his neighborhood had been completed several colonies of his bees got a fine flow of basswood honey, brought in a considerable quantity of fine basswood honey after he knew that there was no more basswood flow. He was enough of a beekeeper to know that honey came from somewhere, he knew that the bees had robbed out some colonies in the neighborhood and he thought it was a good joke on the neighborhood beekeeper, some beekeeper whom he didn't know.

In 87 colonies were symptoms of American foulbrood. In just a few months as a result of one little robbing case, he had by feeding the honey to his entire yard infected 87 colonies out of a yard of 115 healthy ones, and only those who have treated entire yards for American foulbrood know what a story like that means to the beekeeper.

I wonder if we took a vote of those in the room—we are not going to do it, but I would like to find out how many of those here in the Chicago-Northwestern Beekeepers' Association do have infected honey and comb stored in a bee-tight honey-house, or old combs which might possibly have come from diseased hives stored behind a barn, or a pile of hives that had been sitting somewhere around their premises, last August which was perfectly bee-tight, until Johhny came along one day and knocked over the whole pile—not many, I see.

We are all anxious for lower taxes, and beekeepers are anxious to eliminate the toll that they are paying every year to a little microscopic germ which we know scientifically by the name of Bacillus larvae. We are paying that little bug a tremendous toll in all these Mississippi Valley states, and I presume throughout the entire United States. The beekeepers have joined together in associations of this kind for the particular purpose of reducing the toll that all of us are paying to that bacillus, which is the cause of American foulbrood, and we can eliminate that toll, we can wipe it off our account books. We can keep bees without that annual loss of shaking bees, destroying comb, etc., if we will remember those three things which we mentioned a few minutes ago: first, that bees will seek out honey wherever found, second, they are very small animals which will get through a small space, and third, Bacillus larvae can exist in the most minute drops of honey.

At the request of a number who are interested in the broader outlines perhaps of an area clean-up policy, the methods of going into a

large area and completely stamping out disease, if that can be done, rather than the particular methods of cleaning it up in individual apiaries, I might outline the policy on which we are working.

The State some time ago abandoned the method of going into particular yards at request, and cleaning up particular neighborhoods, because some beekeeper suspected that his neighbor had disease, and adopted a policy of taking up an entire county at the request of a beekeepers' organization and covering that county. That method was begun in 1918. It has reached a point at the present time where we do not need to drum up any trade. I feel sometimes that my biggest job is to try to sit tight in Madison and keep from accepting more requests for work of that kind than we can possibly undertake. Two counties this past year, which we hadn't any hope of getting to within a year, were so anxious to have work done in their territory that both of them became more or less angry about it and said, "We will withdraw from the State association unless we can have a clean-up in our county this year," and this winter we have adopted a general policy that we will go into new counties where the county board of supervisors themselves, at the request of the beekeepers, makes an appropriation large enough to cover part of the cost of the work in their county. That is to reduce the claim, somewhat, the injustice, somewhat, of spending State funds entirely in certain areas. The fact that the new counties in which we will go next year have made appropriations of $100 and $300 respectively, for an appropriation for work, totaling about $300 a year in one county and $900 in the other, which is a larger county, is a sign that the board of supervisors are willing to adopt that method of protecting the beekeepers in cases presented to them.

In no case will the State ask the county to make an appropriation. The State department is simply in a position where its funds will not cover all the demands made of it. They will not cover the entire State, and the only way in which we can determine the areas in which the work will be done, which will be cleaned up of American foulbrood first, is in this way. Wisconsin has 42 counties in which American foulbrood exists, and some 20 or 30 of them in which it is virulent. These counties will have to be taken in order, and while progress is made it is not practical, even if we had funds, to try to clean up the whole State at once. An area extends from Madison and Milwaukee, running north to upper Michigan, and covers each one of these counties except two, Washington and Ozelka. Some of the apiaries were 75 per cent diseased when the work was begun, and others down to about 40 per cent. In other words, the problem is much more serious than in Indiana, certainly much more than in the New England States of Pennsylvania and New York and Florida, for which we have the figures.

A MEMBER.—How about Illinois?

MR. FRACKER.—I have no figures on Illinois. Illinois may have as serious a problem as Wisconsin. Jefferson County, in which American foulbrood was introduced 50 years ago, has had it reduced until this past year in the district infected with foulbrood, of all the colonies inspected in that county this year only 3 per cent showed disease. By

the time disease gets reduced that much there is only one thing to do, that is to sulphur the bees and destroy the infected material. Jefferson County is now in a position where that policy is immediately supported, and that is the only way to do, rather than run any risks on these individual experimentations starting an American foulbrood conflagration again.

In one county this year only three-fifths of 1 per cent of the colonies have been found diseased. Milwaukee has been reduced from half of the apiaries down to 4 per cent, Winnebago 3 per cent.

In order to get a broad view of this and find out just what proportion of beekeepers cleaned up, I combined several counties recently in statistical form. It has always seemed to me when we had a treatment as successful as the shaking treatment for American foulbrood developed, and we knew we could control disease in an individual colony, that when we went out to try to control disease over a large area the problem was what might be called a sociological one, it was a psychological one, whether we could go out among 500 people and teach 500 people how to apply a method that is comparatively complicated, and have them apply it and get away with it and clean up their yards successfully was a question.

Out of two typical counties in which a total of 500 yards have been inspected, three were clean individually and 180 different yards have been infected at least once, 86 showed disease in the years 1918 and 1919 and had not shown any since. In other words, one treatment or destruction was sufficient. In 1920, 44 more succeeded in cleaning up. There were 77 that were infected, of which 44 cleaned up. In 1921, 33 previously infected yards were found diseased, and 17 new ones. Whether that reduction will continue, we do not know, because the campaign is rather new, but we do know that by visiting every apiary in the district as far as we can, instructing the beekeepers in the treatment, giving them a chance to treat the first of the year, then going back and seeing where they are treated and applying a certain amount of pressure in any bull-headed work the second year, and going back the third year and treating the remaining colonies or destroying them; by doing this we find disease can be reduced in large areas.

I don't think it is too much to say, at the beginning of the campaign, we would have thought it was an extremely optimistic statement to make, that we believe American foulbrood can be completely eradicated. At least, in a number of areas it has been reduced by the work of the beekeepers themselves where they work uniformly over a large area until American foulbrood in those apiaries is no longer a commercial factor in the production of honey, and that is the first level towards which we are striving.

MR. STEWART.—Do you think it is always necessary to destroy everything?

MR. FRACKER.—No, sir. As we pointed out here, it is not necessary to destroy the bees.

MR. STEWART.—Nor the combs?

MR FRACKER.—It is necessary to destroy the combs. We have never found a case cleaned up in which combs were not destroyed.

MR. MCNEILL.—In inspecting a colony for foulbrood where you have a suspicion it is there or have not, how much of an inspection would you make, what kind of brood do you discover it in, and how far would you go in the inspection of the individual county?

MR. FRACKER.—In the area of clean-up counties every frame in the hive is examined until the disease is found. If it is found in the first frame we go no further. If it is not found in any of the first eight, sometimes the last two have nothing to look at while the disease may be in the honey. You can't inspect that. It is inside some place where the brood exists.

MR. MCNEILL.—As I understand it, there may be only an occasional cell.

MR. FRACKER.—That occurs principally where an area is merely cleaned up or just beginning to become infected.

MR. MCNEILL.—In cases of this kind it would be difficult with from three to six thousand cells in each comb, seven or eight combs of brood. What would be the particular things that you would look for to find those two or three cells of brood?

MR. FRACKER.—The frame is taken up and I run back and forth along the frame, and you can quite easily look into practically every open cell there is, and the inspectors soon become accustomed to see diseased brood at a glance. In the case of new areas where a disease is bad the first frame that comes up has it always in the cappings. In the second place it has whole rows of scales along the larvae cells, and in the third place around the edges here and there you will find bees in the pupa state, dead.

MR. MCNEILL.—Would your cells be sealed?

MR. FRACKER.—Usually yes. We have photographs of cases in which they are not.

MR. MCNEILL.—You would look more particularly at the unsealed brood?

MR. FRACKER.—At the unsealed brood, because it is more often in a ropy stage. The common method of distinguishing European from American foulbrood is used in almost all counties. A toothpick is dipped into the diseased larvae to see whether it ropes. The first thing to do in going over a large yard is to note holes in the capped cells if any; second to see whether there are dark-brown spots or dying brood, and third if there is brood to see whether it can be easily removed and whether it ropes out.

MR. MCNEILL.—To the eye of the inspector what would be the most noticeable?

MR. FRACKER.—The broken cappings one always sees first. You often do not have them in light infection.

QUESTION.—It is difficult to find disease where there are only a few cells. The disease doesn't show up. Doesn't that make it necessary that the system should be a follow-up system?

MR. FRACKER.—I think unquestionably the inspectors miss cases of the kind you mention. The only method of providing for that completely is the inspection each year. A healthy apiary is never inspected

twice the same season under our system with practically no exceptions unless a beekeeper discovers disease. Infected apiaries are often reinspected the same season. In fact they are always revisited the first season and often reinspected. This year we had a case in which we notified the beekeeper we were coming. As soon as an inspection began in the yard it was perfectly clear to anyone familiar with bees that individual frames had been removed from these various colonies. The interpretation was simple. The beekeeper had gone through and removed everything he could see. He had missed three colonies in which there were two or three cells. Two weeks later we went back and the colonies from which he had removed these infected frames showed plainly disease.

MR. MCNEILL.—In my beekeeping I make a thorough inspection of my colonies only probably once a year, in the early spring. What chance is there for me to discover foulbrood if I have it? I will inspect individual combs at any time.

MR. FRACKER.—It depends entirely on your surroundings. If you have no infected honey or source of infected honey for a mile, your chance of infection is very small.

We have mapped some areas in which we have made a study of every individual case of foulbrood to see where it came from, and the number we could not trace to the purchase of second-hand bee supplies was very small, apiaries remaining healthy sometimes to within a half a mile of disease. Within the half-mile line the chances for infection seemed to be pretty good. Under normal cases under your conditions unless there is disease close by, the one inspection should be sufficient.

MR. MCNEILL.—In your inspection do you look through every colony?

MR. FRACKER.—Yes.

QUESTION.—How many counties are in the area of a clean up?

MR. FRACKER.—There are 22 at the present time, including the entire boundary of the area.

QUESTION.—Do you know the percentage of disease found in the cleaned up area?

MR. FRACKER.—I don't believe there is one in which a single case was found this year. We have not cleaned up every infected county within a three-year period. We have reduced infection to an average of less than 3 per cent.

QUESTION.—That is American only, or American and European?

MR. FRACKER.—That is American only. We have followed the advice of United State Bureau of Entomology. The fact that my yard had European foulbrood wouldn't affect you, no matter how close you were to me. You could protect yourself. On the other hand the fact that my yard has American foulbrood, if you are within a half mile or a mile of me, is a very much different matter and of more importance to you, and the only organization that can protect you in such a case is the State.

QUESTION.—How many men do you have at work during the summer season?

MR. FRACKER.—Our men work in pairs, working in cars, and there have been about eight teams out full time. In addition to that we have about thirty county inspectors now, who make inspections. The staff itself is quite a large one, but our Wisconsin season is so short, extending over hardly twelve weeks for the inspection season, that we have to maintain a larger force for a shorter period than would be true in the Ohio Valley.

THE PRESIDENT.—I am sure we appreciate the talk by Dr. Fracker. It has been very valuable to me and I am sure it has been to you. I will say that the membership fee in the Chicago-Northwestern Beekeepers' Association is $1.50. You get with that a membership also in the Illinois State Association, and if you care to take with that a subscription to one of the Bee Journals, Mr. Bull will arrange that with you.

MR. WHEELER.—Mr. President, I want to say something while this man is here. I have a word or two to say from an experience of thirty years with foulbrood. There are three points he misses, I think. Maybe he does it intentionally, maybe he doesn't and maybe he does not know, and I think it is up to you fellows and the Wisconsin beekeepers to know the experiences I have had.

There are three things in treating foulbrood. In the first place this man has said that in shaking your bees you go through your hives and you find here and there a diseased one and you shake those bees off promiscuously and give them a new hive, according to directions. A great many of those bees that are flying and excited go into the neighboring hive and carry disease. What is to be done with it?

Another thing happening is in case the queen is killed, where do those bees go when the queen is killed? They go into the hive next to them, within an hour. You go on year after year treating foulbrood.

I have a way—maybe you would like to know it—of getting around that. I would just as soon you would know it, and that is, I inspect my bees three or four times a year. A hive that has anything the matter with it I mark it and when it comes a cool spell, before any bees fly in the morning, I move every hive of diseased bees away, and if there are any bees left on the bottom boards I scald them or kill them. I move the bees to a place a mile from where they are, move them altogether, put them all together in an apiary by themselves. I shake those bees all out at the same time, they are all shaken out or cleaned out of the empty hives. I take that brood, and I am very careful with it. What do you suppose I do with that? Do you suppose I go to work and melt it where the robber bees can get it? No. I take it to a dark, cool cellar, every drop of it, and put it where no robber bee or live bees can go, and I leave it there until the frost and cold winter comes, then I melt everything up, scald my frames. Is there any chance of them getting the honey in that way? That is my system. Now I would like to answer any questions you folks might ask on that point.

QUESTION.—Where do you do that scalding and cleaning?

MR. WHEELER.—In the basement, after the cold weather is on. If you do it in the summer time, who can keep the robber bees away or from getting in? I carry it in where the bees can't get it. I melt it

up after cold weather begins. If there is any leak in my theory I would like to know it?

MR. JOHNSON.—Wouldn't it be better to brush the bees instead of shaking them?

MR. WHEELER.—What difference would that make? I put them all together. I shake every colony. Those bees have no place to go. If they lose their queen they go into the next swarm. There is nothing there. They are shaken on empty hives. Is there any leak to that? This man sends out agents and they give instructions, they tell us to shake the bees out. The little things are what count. Here is a swarm of bees, you killed a queen in the operation. They spread themselves into the air and give disease to every colony they go into. In my method they are separated entirely. If they lose their queen they go in with the others and there are none to carry disease. After 48 hours I change combs again.

QUESTION.—What do you do with the melted up honey?

MR. WHEELER.—I extract the honey, melt the combs and all. I do not try to do anything with it. It is in the brood nest and no good. I do my shaking out in the beginning. You have got to treat the thing as a terrible scourge and get right after it. If you leave loopholes, the disease comes back.

QUESTION.—What percentage of your bees get foulbrood near Chicago?

MR. WHEELER.—I don't think they get it every year. Maybe a dozen or so out 300 or 400 this year. Some years are worse than others. In a bad season when they rob each other there might be 40 or 50. I think there was last year. One inspection will not do. Once a month during June, July and August; you have got to go through them three times at least.

QUESTION.—Does your method clean up that bunch that you take away, absolutely?

MR. WHEELER.—Not absolutely, there may be one in 80 or 100 that will show it. I don't know whether that comes from what they get outside, or where it comes from. But be careful as you may, it comes back.

QUESTION.—That is one shaking on sheets of foundation?

MR. WHEELER.—No, I shake them into an empty hive, leave them 48 hours and let them build comb as they will. Then I shake them again, then I put them on foundation. I do not allow a comb to go with them or be with them.

MR. FRACKER.—I am sure we appreciate the suggestions the gentleman has made. I can heartily support everything said. The talk made, I hope no one will understand, as being a complete diagnosis of American foulbrood, because there are many points not covered.

With reference to carrying the infected material into a dark cellar, my personal opinion is, and our experience has been that if it is necessary for some reason to store diseased material at all, a dark cellar is the safest place it can be put. It is very far superior to any honey-house you may imagine is bee-tight. Very often the cellars of bee-keepers are under their houses, with a cellar window open. I have seen

cases where bees were coming in and out of cellar windows. If the cellar is dark and cool, that would not occur. If it is impracticable to eliminate diseased material at once, it is important and much better to put it in a dark, cool place.

THE PRESIDENT.—We have with us Mr. E. W. Atkins, of Watertown, Wisconsin.

TREATMENT OF BROOD DISEASES AND MAXIMUM HONEY PRODUCTION.

(By E. W. Atkins.)

A maximum crop of honey is possible only when the beekeeper is fully familiar with the principles of bee behavior. In a locality where American or European foulbrood is present it is not only necessary to know bee behavior, but also to know the behavior of the organisms which cause the diseases. At the present time our knowledge of the diseases is somewhat limited, but we have at least a very good working idea of them. Before attempting to treat colonies for either of the diseases, it is very important to know which disease has to be handled, as the behavior of the germs causing one disease is entirely different from that of the other. For example, the American foul organism is capable of producing spores which are extremely hard to kill. The spores exist indefinitely in the dried-up remains of the larvae. The scales stick fast to the cell walls and the bees are unable to entirely remove them. In the case of European foulbrood spores are not formed and the dry scales may be removed fairly easily by the bees. It is, therefore, not necessary to shake colonies affected with European foulbrood, whereas it is absolutely necessary to do so in the case of American foulbrood, otherwise the colonies should be destroyed to prevent the spread of the disease.

Bees when gathering nectar place a considerable quantity of it in empty cells in the brood chamber. In this way, if American foulbrood is present, some of the nectar is likely to go into cells containing particles of the scales. As soon as this happens spores of the disease float out into the nectar. Since nectar is moved around a good deal in the hive in the process of ripening it, the spores of American foulbrood are more than likely to find their way into the supers. This makes it necessary when treating for American foulbrood to not only thoroughly boil or destroy all brood combs, but also any super combs which may have been on a colony infected with the disease. Where only one cell of American foulbrood appears in a colony, it is absolutely necessary to treat the colony. If the diseased cell is cut out, other infected cells will appear within a very short time. Cutting out diseased cells does not remove the cause as the spores are likely to be in honey in any part of the hive. In order for the beekeeper to produce a maximum crop of honey in an American foulbrood locality it is necessary to examine the brood combs carefully every few weeks during the active season. The strongest colonies may possibly contract American foulbrood first, as they have a larger working force in the field than weaker colonies, with which to over-power colonies weakened by the disease. However, when a strong

colony contracts the disease it quickly loses strength and in a comparatively short time may be robbed out.

In the case of European foulbrood the weak colonies are usually the first victims of the disease. Since we all agree that prevention is better than cure, we should eliminate to the greatest possible extent the occurrence of weak colonies in the spring by providing the best possible conditions for wintering. Another operation in the treatment of European foulbrood is the introduction of prolific Italian queens. Where much disease is present it is helpful to place the diseased brood above a queen excluder with the new queen below on one or two combs of healthy brood and empty combs in another hive body.

The introduction of Italian queens would be profitable even if European foulbrood were not present as Italian bees are in general much better honey producers. In other words, the fundamentals which prevent European foulbrood from becoming serious in an apiary are the same as required in the production of a maximum crop of honey.

European foulbrood spreads more rapidly when no honey is coming in. It is, therefore, a good plan under such conditions to feed a one to one solution of sugar syrup to the infected colonies. This procedure is especially beneficial in the spring.

When a careful look out is maintained for disease it is usually possible to make the treatment for American foulbrood at the beginning of the main honey flow. By so doing the largest possible field force has been obtained for the honey flow and at that time there is the minimum quantity of honey in the hives.

The important point to bear in mind in treating American foulbrood is that the spores of the disease are in the honey and if any healthy colonies get any of it, they are more likely to contract the disease.

The treatment should always be made during a honey flow to prevent robbing. Much care is necessary to prevent honey from being spilled on the ground and on hives, and also to prevent the bees from gaining access to the diseased combs of honey and brood. The combs should be cut out of the frames in a bee tight room and boiled in a closed vessel for at least 45 minutes, or destroyed by burning in a hole at least one foot deep to prevent honey from flowing over the surface of the ground. The earth must be packed into the hole again as soon as the fire has burnt itself out.

In an apiary where a few colonies are to be treated, the utmost care should be used, otherwise all the colonies may get the infection and possibly spread it to other apiaries in the neighborhood. Where the beekeeper has the protection of a law his bees are less likely to get the disease from other apiaries than in states where no disease exists and should therefore do everything within his power to clean out the disease from his own yards. The sooner this is done the more profitable honey production will become in an American foulbrood locality; and by good methods of beekeeping European foulbrood will cease to be a cause in the reduction of the honey crop.

MR. STEWART.—Did you ever see too much honey in the brood nest in the fall?

MR. ATKINS.—I have seen it while brood rearing is going on.

MR. STEWART.—Does that happen often?

MR. ATKINS.—Not if the bees have been provided with plenty of room above. Under natural conditions if the bees have been given sufficient room above, I don't think it is likely to occur.

MR. STEWART.—Do you ever turn a 10-pound pail of syrup over them?

MR. ATKINS.—Quite frequently. It is a good idea if you are in doubt as to the quality of the stores, to feed 10 or 15 pounds of syrup. They use that sugar syrup during the fore part of the winter. The result is that they do not get to the natural stores of honey till towards spring. Then if that honey contains impurities which are often fatal in a cold climate during the winter, there is no harm done.

QUESTION.—Did you feed the syrup for both outdoor and indoor wintering?

MR. ATKINS.—It is not so important for outdoor wintering, although it is advisable. Sometimes in the outdoor wintering of bees in this northern climate, the bees are confined to their hives for a long time.

MR. STEWART.—If they have plenty of honey in the brood nest, won't the average queen bring you a good swarm of bees every spring?

MR. ATKINS.—She will bring you a good swarm of bees, but I maintain you are getting a better one if you have some of that honey out of the way in the second brood chamber. There is no doubt that a good queen is capable of distributing her brood in 14 to 16 or even 18 frames, or an average of possibly 12 frames of brood. If you are using a 10-frame hive you can not have 12 or 14 frames of brood, because there is honey there, too; then a certain percentage of those cells will stretch, a certain percentage are drone cells and you don't get the colonies.

A good many beekeepers are using three hive bodies in the spring for the stronger colonies. I can't lay down any hard and fast rule, but I can say this: Give additional room to each colony in advance of its needs. If you are a little too late the harm possibly has already been done. You are cutting off your working force and you are doing more than anything else likely to cause swarming. We do not know all the factors that enter into swarming, but we do know that a tendency to crowd the colony causes a greater tendency to swarming than one that has an abundance of room.

QUESTION.—Do you find the big hives retard swarming?

MR. ATKINS.—Yes, they have a great tendency to do so. We have not tried the large hives out very extensively. We have tried them out on a small scale and we couldn't say definitely, we haven't had enough experience with them.

MR. JOHNSON.—Instead of tiering up the hives, wouldn't it be better to have larger hive bodies?

MR. ATKINS.—The "Long Idea" principle?

MR. JOHNSON.—On that principle.

MR. ATKINS.—In the matter of supering that would have to carry it up very high. The idea in supering is never to let the bees fill the

cells and seal them above the brood. In other words, nevert let them quite finish their jobs. When one super is about one-half to three-fourths full, raise it up and put another under it, whether extracted honey or comb honey.

QUESTION.—Don't you think a queen will work in the upper super when it is placed about quicker than she will go down?

MR. ATKINS.—Yes.

QUESTION.—Then it would be better to put it on top?

MR. ATKINS.—Yes, if you winter in the cellar, you set your bees out in the spring in one hive body. In about two weeks the hive body the queen is already laying in is raised up and you put the five combs of honey underneath. After awhile when the upper one is completely filled with brood you can reverse it. That is merely a suggestion. Some people do not care to do that. Bees prefer to work up. For that reason the long idea hive does not appeal to me. There are no hives on the market that will eliminate swarming.

MR. H. H. MOE.—I will give my experience. I have often wondered at that Dadant statement of not over 5 per cent swarming. I have probably matched beekeepers that have had large hives as against my eight-frame. I am a comb honey worker. Don't confuse as a discussion of an eight and 10-frame idea, for that is a different proposition, but it is something like last summer, when there is no difficulty about swarming at all. I think that will answer the question. Then there are certain seasons like in 1913, when bees swarmed out before 6 o'clock in the morning, an extraordinary and unusual thing. That will answer the question somebody suggested in regard to Dadant hives—if it wasn't the location. It is not only a question of location but also of season. When there is a poor season and the honey flow is slight, there is little swarming.

MR. ATKINS.—I know in 1916 we used Langstroth hives. We used bees supposed to be a non-swarming strain. We used young queens reared the previous August, and everything attempted to swarm. I came to the conclusion that there was a lot we didn't know about it. The nearest method I know of controlling swarming in extracted honey production is the Demaree plan.

MR. STEWART.—I had the long idea. They were long, they were four feet long. Five out of six swarmed.

MR MOE.—There is one other fact that should be added. There is a difference in races, between the Italians and the common black bees. The Italians will swarm any day, without any preparation, just as they take a notion, and in a most interesting fashion.

MR. MCNEILL.—Mr. President, I have enjoyed this talk very much. It seems to me it is for the fellow that winters in the cellar. You can't put two stories on when you're wintering outside. Two weeks after you would ordinarily carry them out of the cellar, the first of April, and the middle of April you would want to put on another story, and if you do that with bees outside, you ought to do away with any advantage.

As far as the larger hive is concerned, it is all connected. I believe the Dadants when they say they haven't more than 5 per cent swarming, because I haven't any more myself, and I have practically their hive,

the Jumbo hive. For the last three years I don't think I have had more than one natural swarm in 80 colonies.

I have had swarms, but they were practically all from supersedure of queens. If you have any kind of hive and they have cells at swarming, time, some of them will swarm. You can tell it is supersedure from the fact that the queen is generally three or four years old and there are some cells there. It is easy to change a Langstroth into a 10-frame Jumbo hive, making a frame to fit on top and putting in Jumbo hive frames. Then you can try it and see. You don't have to use extractors. We don't bother with the bees in the fall to see if they have enough honey, just leave them. If you lose one or two of them from starvation, you don't have to bother yourself; go to bed and sleep all winter the same as they do.

MR. ATKINS.—I am glad you brought up the question of what to do in the case of colonies wintered outside. It is a point I omitted. It is

A rough protection, or corn fodder, on the north helps this apiary to withstand the cold sweeping winds of winter. Apiary of H. O. Bader at Fleming.

still more simple, I think, if you are using the Langstroth and winter outside, from what it is if you are wintering in the cellar. Personally I believe the best way to winter them in that case to insure having 25 pounds of honey in that extra hive body is to put it on in the fall, in other words, winter them in two hive bodies without a queen excluder.

MR. MCNEILL.—It makes more expense. You have to have a double back and the expense and trouble are about trebled in the case of two hive bodies over one.

MR. BIEGEL.—I have had some experience with the 10-frame hive bodies, wintering a colony in two 10-frame bodies, four or five packed together in a quadrupled case. In the same yard there were single

bodies, four of them, which I packed together in a quadruple case, and the actual difference in expense between the two is about 20 per cent.

MR. ATKINS.—What about the results you obtained?

MR. BIEGEL.—The results were in favor of the two 10-frame bodies.

MR. STEWART.—You said you put on your supers two weeks after you take them from the cellar. Aren't there fewer bees around, that die off?

MR. ATKINS.—Not if they were wintered well, no. There are a few less for the first three weeks.

MR. MCNEILL.—I would say with the Dadant method of packing and also with mine, it would be practically impossible to winter in two hive bodies. Mine are packed with poultry wire and leaves are packed about the hive body. They are left on the ground. The Dadants take theirs off, but in any case it would be practically impossible to get poultry wire to stand up to the height of two hive bodies packed properly, and have it go through the winter without having considerable of it rot down from the extra packing. It would sink down.

MR. ATKINS.—Do you use the Langstroth equipment?

MR. MCNEILL.—Langstroth length.

MR. ATKINS.—All this discussion resolves itself into having sufficient room for stores and brood. I am considering Langstroth equipment, because everybody admits the Langstroth 10-frame hive is too small. There are a good many commercial producers using an eight-frame hive. The point is you can make an eight-frame hive as large as you like, by adding extra hive bodies. In the 10-frame you do not need so many. With the modified Dadant hive you need less.

THE PRESIDENT.—I have here a communication from Mr. E. R. Root. He says: "'Death and burial of mother makes it impossible for me to come. Will not be on the program."

His mother died in Florida, I think Thursday, of last week. Mr. Root was on the program to have given a talk on "Moving to New Pastures."

The best thing that has been written up to this time in regard to swarm control and, incidentally, for the production of comb honey, is a government bulletin, written by George S. Dennith, Farmers' Bulletin 1198, to be obtained from the Chief of Division of Publications, United States Department of Agriculture, Washington, D. C.

MR. MOE.—There is more to swarming than many think. For instance, different races of bees. I used to keep the different races of bees and study them. One year a boy that I had, heard of an advertisement and wanted to get some bees. Finally he sent for some. Next spring I watched one colony, and before I was aware of it he cut out 32 queen cells. That was a little more than I had had experience with. At the State Fair that year some fellow from Chicago that seemed to know something about them, maintained the only way to keep them from swarming is to put them in an ice box. If some of you get that idea I think the 5 per cent idea will be eliminated altogether. After years of experience and careful study I have not yet come to the point where I would like to be a big honey producer. In my case cellar wintering,

carrying 150 hives or more, in and out during the winter and spring, besides a lot of heavy lifting, is about as much as I can handle. I have too many bees now.

Somebody has remarked that the 10-frame hive is too small for a vigorous laying queen. You will have to have 12 to 14. It is not so much the size of the body as it is to get frames built down to the bottom bar. A lot of frames are not, as a rule, built down to the bottom bar.

Diseased Honey.

The President.—If you have questions written, please hand them in and we will try to answer them. Here is one: Is it safe to boil diseased honey to feed to bees; how long should it be boiled?

Mr. Stewart.—Two to three minutes is long enough.

Mr. Moe.—No, I think that should be corrected. I think it should be boiled 10 minutes at least.

The President.—There is another bulletin printed by the United States Government that goes into this subject very thoroughly. They have experimented in a scientific way on foulbrood, how to clean it out, how resistant it is, and so forth. They claim it requires 30 minutes to kill all the germs of American foulbrood, in a closed vessel. A closed vessel is used because that causes more pressure, and the more pressure the higher the boiling point. Some of the infection might get on the sides of the vessel, and if it isn't heated to at least 212 degrees Fahr. you are liable to get some of those germs into the honey. I think it is not a very safe thing to do, yet it is being done all the time.

A Member.—With a closed vessel and with the steam above the germs on the side of the vessel would be killed.

The President.—It wouldn't be very good for feeding in the winter, but it can be used in the spring time. Of course, boiling doesn't improve it any, but it can be used. If you scorch it, that spoils it. It has been found that the germs are killed more quickly if there is water added, more quickly than if it is all or nearly all honey. What success have you had in selling honey this year, as compared with other years?

Selling Honey.

Mr. Bull.—I find there is a much greater demand for honey than there was 10 years ago, when I started house-to-house selling. It was not at all uncommon in those days to find a dozen or a score of people who had never tasted honey. Now, nearly every one knows of it and uses it. I find there is probably five or 10 times as much honey used now as there was 10 years ago, in the Chicago district. I can sell it faster than I can get the honey. As a matter of fact, I get more for my honey than any of my competitors.

A Member.—On your looks or on the honey's looks?

Mr. Bull.—All on the quality of the honey.

The President.—Honey has been lower this fall than for some time. It has been selling at wholesale for as low as 6 cents a pound. It is considerably higher now, carload lots bringing 12 cents, and in

small lots to the retail dealer, in 60-pound cans, it is 15 and 16 cents. To the consumer it is bringing 25 to 30 cents in five-pound pails. I have here a government report, giving the average prices in the various states.

So far as the demand for honey is concerned, I have not only had the same experience, but I have talked with a good many commercial beekeepers and they claim there is more honey moving this year than ever before, that hundreds of carloads are being sold, and honey from the west is being shipped to our large cities, five or six cars at a time. It was done in Detroit, and canvassers were sent out, selling honey direct to the consumers. In this way a great deal of it is being distributed. It is not being sent to the large wholesale dealers, so the producer got out himself and sold direct to the retail dealer and consumer. A great many producers are selling throughout the country, canvassing for themselves, and there is a good mail order trade. We are selling in my part of the country quite a lot of comb-honey and honey in pails directly through the retail grocers. Of course, to get a retail grocer to handle honey in pails you will have to educate him to it, also the buying public, so in my own case I advertise the fact that the grocers in my town sell my honey. In this way it helps them sell it and it helps take the honey off my hands. The dealer can sell it more cheaply than I can by canvassing.

QUESTION.—If we have a good fruit crop next year, what will you get for your honey?

THE PRESIDENT.—We will not get so much. It has been stated in a recent article that there is a scarcity of canned fruit, and, of course, we know that helps the sale of honey.

MR. MCNEILL.—What kind of a discount do you give from the selling price to the grocer who handles your honey?

THE PRESIDENT.—About 25 per cent. There are very few 10-pound pails handled through grocers. We sell five pounds to the stores in dozen lots and they sell it for 25 cents a pound. Everything is cash, a dollar a pail for five pounds and he sells it for $1.25, and I have no expense of boxing, no freight charges to pay. When they run short they call me up and I get them more. They don't have any losses by having honey lie around. They buy it in small lots.

MR. WHEELER.—Do you pay any attention to its being granulated?

THE PRESIDENT.—On the cover I have printed a red label in large letters: *Notice. Pure honey is apt to crystallize or granulate in cool weather. If preferred in liquid form, place the can in water and heat slowly. Do not boil or overheat."*

MR. BULL.—Just another word on selling honey. I find that one thing that reduces the volume of sales to a considerable extent is the variation in price. Beekeepers sell honey on the road for all kinds of prices. Honey is being offered this year as low as 12 cents for extracted and 20 cents for comb honey. Anybody that wants to go out and canvass will find that fact every day in the week. The fellow that is selling honey along the roadside pays 50 cents to have a sign painted, then he is through, straight cash, no expense of any kind for selling. But that

moves only a very small percentage of the honey moving in the United States. How about the honey that has to be sold over the grocers' shelves,that has to be taken to the consumer. Did you ever stop to think what percentage of honey in the United States has to be shipped out of places produced, to be sold? Then there is the foreign production of honey that is being placed on our markets, which is cheap honey —in quality and price. That honey has to be sold in competition with our honey; somebody has to be paid for selling it. When you are selling your honey so low that theirs has to be sold at twice your price, something is going to happen—you will be looking for a market for your honey if you don't watch out. There is nothing that kills the sale of honey so much as for some fellow to undersell. If you sell in small lots at the same price that you wholesale to your grocer, naturally he cannot compete with you and you are killing the trade if you go out and sell honey to the consumer directly at the same price you sell it at wholesale.

It is considered by those who have studied the matter, that it is worth as much to sell honey as it is to produce it. If it is produced at a cost of $1, it should bring $2 by the time it reaches the table of the ultimate consumer. It is worth money whether it is sold by the storekeeper or yourself, and you can't afford to put this honey in the hands of the consumer at the same price you do in the hands of the wholesale grocer. If you do you will kill your trade. Your next order from your grocer will be less each time. If every one would ask a nearly universal price for a universal product, we would have a much better demand than we have at the present time.

A MEMBER.—They are selling comb honey on the roadside for 20 cents right along.

THE SECRETARY.—We have beekeepers not far from Chicago that sell 10,000 pounds of honey at their door every year.

MR. KANNENBERG.—Not every one of them.

THE SECRETARY.—Some of them do.

MR. KANNENBERG.—It doesn't cost them much to sell it.

THE SECRETARY.—We do not care how the honey is gotten there, if they put their price where it belongs, give everybody a chance to sell, so that the consumers when they go to buy a can of honey, no matter where, find the price the same. If the price was the same in every place, what would be the result?

MR. HUNTER.—It cost me $1.50 to produce a pound of honey in 1919, and I sold it for 40 cents.

MR. KANNENBERG.—You are selling it for less than it cost you, a lot of you.

THE PRESIDENT.—The average production for the years 1914 to 1920 in the United States is given by the government statistics as 43.3 per colony. That is the average. If we consider one's time, the interest on his investment, the depreciation of equipment, labor and all the factors that go into making the cost, the cost of your containers, if you figure it all—throughout the middle west honey cannot be produced for less than about 15 cents a pound. The fellow who retails it for 10 or 12 cents a pound is fooling himself as well as destroying the market.

MONDAY EVENING SESSION.

THE PRESIDENT.—The pictures of the Lewis Company are ready to be shown, and Mr. Atkins of Wisconsin will explain the pictures, How Beeware Is Made.

(A 1,000-foot film was shown on the screen, and explained by Mr. Atkins.)

THE PRESIDENT.—We have with us this evening Mr. W. A. Hunter, of Terre Haute, Indiana, who will speak to us on the subject of organization.

ORGANIZATION.

(By W. A. Hunter.)

Mr. President, Ladies and Gentlemen: The privilege of addressing you is not only a pleasure but an honor I appreciate very much. I am very anxious to see beekeepers prosperous. I keep bees and I enjoy them very much, but I haven't made much money out of them.

My presence here with you more experienced beekeepers reminds me of the story about the red-headed, freckle-faced, cross-eyed office boy and the clothing manufacturer. The clothing manufacturer had been for years, troubled by the labor unions. One evening, he came into the office from the factory, wringing his hands, tearing his hair and walking the floor, seeming to be in great distress. The office boy inquired the cause of his anxiety and the boss related his experience to the lad and finally stated that his workmen, although granted a 10-hour day, were dropping their work even then, at from a half hour to an hour before quitting time, to wash and clean up. The boy informed him that it would be a cinch to overcome the trouble and suggested that he turn off the water.

Your worthy President, Mr. E. S. Miller's article in the bee journals of late, covers the subject rather thoroughly, but I will endeavor to emphasize some of the things you already know.

Organization is the act of arranging in a systematic way for use or action. The duties of any industrial organization are manifold and everlasting, and should incorporate the following activities faithfully and judiciously administered by the association's executives: Educational Promotion, Social Intercourse, Paternal Guidance, Fraternal Benevolence, Influential Execution and Financial Betterment.

Coleridge's definition, "What is organization, but the connection of parts in and for a whole, so that each part is at once, end and means." We have organized governments, State organizations, political parties, organized armies, organized football teams, organized baseball teams, all for a specific purpose. A colony of bees is the best example of an effective, co-operative organization. Every experienced and well informed beekeeper well knows the benefits of organized co-operative effort. God has blessed beekeepers with the privilege and pleasure of an intimate acquaintance with the most perfect living example of highly organized efficiency that I have ever had the good fortune to become acquainted

with. Each working member of a normal strong colony of bees strives its utmost conscientiously, untiringly and unselfishly for the success of the organization and salvation of its individual members.

I want to read a newspaper article, by Arthur Brisbane, the highest salaried editor in the world: "Three thousand pounds of sugar are ordered sent to Massachusetts to feed starving bees. One single county will need at least 30,000 or 40,000 pounds. Its bees had a hard summer because of the rain. It is a comfort to know that when the bees get the sugar they divide it up fairly. Each gets his share. Early in the season they killed off the drones, non-workers. Only one bee gets more than the others, and it is not a bee that puts the little bees to work and lives on the profits, nor is it a bee that watches others while they work and takes the product away from them, giving them just enough to live the next day. The extra amount is given by the bees to the mother bee, called by human beings the queen bee. Only one bee in the hive has children. She sees her husband only once in her whole life, on which occasion he dies. Then she raises little bees while others work. This seems a just, although a rather dull arrangement (especially dull for the father bee.) Things are managed differently in the human hive—too much sugar for few, not enough for many."

Social bees live in communities and thrive. The solitary bee's female builds her own nest and provides alone a meager existence for her brood.

Beekeepers may be divided into two groups, according to their intelligence, social and solitary. Social beekeepers associate, attend meetings, mix and mingle, visit and converse, read and study, observe and learn, and are benefited by the accumulative results of organized strength and activity. Solitary beekeepers potter, alone, groping in ignorance and we all know what sooner or later happens to them. Our Saviour did not choose an anchorites' or monastic life, but had a social and affable way of conversing with mortals. He was easily spoken to or addressed—received others kindly and conversed with them in a free and friendly manner, was courteous and sociable. There is no excuse or place for solitary beekeepers in this day and age. Helping hands are extended and a cordial welcome is awaiting them to join the onward movement. Social beekeepers can and will prosper, secure happiness and add value to their property through a well managed co-operative organization. Strong colonies secure the surplus honey flow. Men strongly organized secure the surplus money flow.

An association of beekeepers must have some definite objective and persistently strive to accomplish its purpose. Individuality, selfishness and jealousy must be abandoned for the good of the organization. Individual advantages must be renounced utterly—on this principle rests the success or failure of any mutually co-operative association of men.

John D. Rockefeller is the greatest economist and organizer the world has ever known; he started in the oil business on $100 borrowed money. Without the Standard Oil Company's organization, productive ability, distributing facilities during the development of automobiles, the ordinary man would be unable, even now, to enjoy the pleasure of an

automobile. Their service stations are everywhere. At no time or place is, nor has there ever been, a shortage or over supply of gasoline.

When beekeepers serve the public honey in a like manner, there will be no over production and prices will be stabilized. Beekeepers will prosper, be happy and have plenty. Automobiles would not be where they are today if beekeepers, in their present disordered state, had to furnish honey to keep them going.

A nucleus must be built up into a strong normal colony to be of any benefit. Beekeepers working alone, single handed, are very much like taking a strong colony of bees, divided into as many parts as there are bees in the colony using pill boxes for hives.

Harry Warren, the Nevada comb honey wizard, our good friend, Mr. E. R. Root, Gleanings editor, tells us in the August and September, 1919 Gleanings, unites three colonies at the beginning of the surplus honey flow. Why? The added working strength in one colony benefits Mr. Warren more, financially, than the individual colonies would if left alone un-united. This reminds me when the buggy business was in its glory, Ohio, Indiana and Kentucky each had a vehicle dealers association. They were not satisfied with their accomplishment, so they decided to unite and form what was known as the tri-state dealers association. After uniting their organized strength, they held an annual convention in Cincinnati's Music Hall. They rented a lot of space, which was resold at a profit, to the vehicle manufacturers to exhibit their samples and make sales to the dealers present, mostly members of the tri-state dealers association. The Music Hall in Cincinnati was a successful vehicle market place once each year for one week, where vehicle dealers, manufacturers and accessory men met and economically transacted business in a very satisfactory manner with profits to all. I hope to see the day when beekeepers of the United States will hold an annual exhibit in connection with their convention where the producers and buyers can meet, face to face, get acquainted and transact business under favorable circumstances. I think, even now the Indiana State Beekeepers Association could hold its convention during the week of Indiana's Apple Show and in connection have an exhibit of its products for sale, as well as secure an exhibit of the things it buys and uses.

My only hope in addressing you today is to give you a few facts and figures, as well as call your attention to the many possible benefits of a strong beekeepers organization, so each of you will not only join this association today, but go home equipped to organize your county and secure your delinquent brother beekeepers membership.

Some commercial beekeepers think beginners and little beekeepers should not be encouraged—I can not agree with them, as this is a matter of view point and brings to my mind the discussion at an Irish bricklayers convention, on the purpose of mortar. Some of the delegates insisted that mortar is used between the bricks to hold them apart, while others were just as firm in their belief that mortar was put there to hold them together.

Supposing Henry Ford was the only automobile manufacturer, do you think he would be in the insane asylum? Henry Ford is able to

manufacture and sell a million cars annually. Every automobile manufacturer, automobile dealer, automobile salesman and automobile owner assists Mr. Ford in the sale of his cars, as the combined influence and propaganda has created the present demand for his automobile. I am convinced, the more good beekeepers we have producing good honey, selling good honey, and talking good honey, will increase the consumption and certainly the desire for honey and create a demand that will surprise all of us. Terre Haute is a much better honey market since the beekeepers of Vigo County organized. Furthermore, Bradstreet statistics show that only 5 per cent of commercial undertakings succeed and 95 per cent fail, so there is very little to fear from the beginners. Beekeepers die, so it is very important to recruit the ranks of our worthy pursuit. Tons of honey go to waste in Vigo County, which is a sin and a shame. Our organized authorities hazzard the statement that we secure less than one-tenth of 1 per cent of the nectar that is secreted in the United States. Why in the name of common sense would any beekeeper wish to restrict their efforts to secure this wonderful sweet, a food fit for the Gods and compel God's children to eat the unwholesome, injurious syrup placed on the market at the present time.

The work of an association, like an army, is limited only by its numerical strength, financial support and executive skill. A strong organization should and will not cost its members one cent, if properly organized and managed by its executives and heartily supported by each of its individual members. How is this possible? The supply manufacturers and consumers will not only pay all the expense of running your organization but a substantial surplus, as I will show you later.

Organization enables producers of the second best sweet, a semi-manufactured article, maple syrup to secure on an average 25.7 cents per pound or $2.84 per one gallon square can for his product, in a market flooded with cheap substitutes, adulterated maple syrups, and maple blended syrups, at a much lower price, while the beekeeper is compelled to accept an average of 10 cents per pound, or $1.20 per gallon for the best and most delicious sweet known and the only natural sweet obtainable, without a comparable competing sweet in its way. The cut rate grocers of Terre Haute, advertise pure honey in Mason screw cap glass jars for 15 cents per pound, while pure maple syrup retails, without advertising, for 36 cents to 40 cents per pound, or from $3 to $5 per one gallon square can. Does that trouble me? "Not in the least." They are simply discrediting the quality of the honey by offering it at such a low price. As you no doubt know, people are suspicious of honey, that is extracted honey, they think it is either manufactured or at least adulterated. It is surprising how many people think comb honey is manufactured. So when honey is offered at a suspiciously low price the public is afraid to buy.

Over production of honey and under production of maple syrup are not responsible for the difference in price. On the contrary, the production of each is about equal. May, 1921 Monthly Crop Reporter tells us that 45,127,450 pounds, or 5,649,931 gallons of maple syrup was produced in the United States in 1921. August 3, 1921, United States Census tells us 55,261,552 pounds, or 4,605,129 gallons of honey was

produced in the United States in 1919, which is the latest information I am able to refer to. So as a matter of fact, there is approximately one million gallons, or ten million pounds less honey produced in the United States annually than there is maple syrup. From this, I feel sure you will see that there is something radically wrong with the producers and distributors of honey. Many claim that the foreign honey dumped on the market is responsible and I agree with them. Every drop of inferior foreign honey that reached the consumer, has a disastrous effect on the honey market. However, if the American Honey Producers League will incorporate on their label, "Produced in America" and never permit their label to be used on any container except those containing nothing but honey produced in the United States, then the foreign honey will have a hard time finding buyers.

Maple syrup producers have to contend with maple syrup producers in Canada. Quebec alone produced in 1921, 15,798,988 pounds, or 1,974,873½ gallons of maple syrup. It is interesting to note that the farm values of maple syrup and maple sugar has advanced continuously since 1917. Of course the war had its effect, but maple syrup and sugar did not drop as low in proportion in 1921, as honey did. The following statistics will show:

1917—14.7 to 16.3 cents per pound	$1.22 to $1.34 per gallon
1918—22.6 to 18.8 cents per pound	1.58 to 1.85 per gallon
1919—26.9 to 22.0 cents per pound	1.86 to 2.19 per gallon
1920—37.6 to 29.3 cents per pound	2.35 to 2.93 per gallon
1921—25.7 to 24.9 cents per pound	2.17 to 2.27 per gallon

Does the maple sugar and syrup producers organization pay? Whom does it pay? There seems to be a woeful lack of intelligence on the true relative value of honey, the incomparable sweet. I wish to call your attention to the first best sweet known. Maple syrup is the second best sweet known and sorghum molasses is the third best sweet known in the United States, for human consumption. From the producer to the consumer, there is a senseless undervaluation of honey, all along the line of distribution. The ridiculously low prices placed on honey by the producer, unconsciously degrades and discredits honey in the minds of the uninformed. It certainly has no beneficial effect on the minds of anyone connected with the honey producing, or marketing industry, so far as the true value of honey, as a food product is concerned. Even our best honey frequently sells for less than the third best sweet (sorghum molasses), which is a coarse, strictly manufactured article, never to be compared with honey.

The nut producers, through organization are able to sell nut hulls for 48 cents per pound. While preparing this paper, I purchased one pound of English walnuts, one pound of almonds and one pound of cream nuts, to determine the net cost of the eatable portion. I paid 48 cents a pound for English walnuts in the hull and after cracking and hulling, I had eight ounces of nut meats, costing me 96 cents per pound. The almonds cost 32 cents per pound, with the hulls on and the goodies cost 48 cents per pound, while the cream nuts cost 25 cents per pound

in the shell and the wastage was 50 per cent, so the eight ounces of cream meats cost me 50 cents per pound.

Comparing the cost of honey with poultry, butter, jams and jellies, you will soon learn that this delicious sweet, with no hulls, peeling or other waste, is and has been selling for less than it is actually worth. The Nut Producers Association insist on living prices, yet I understand there are four million dollars worth of foreign nuts dropped on the American market annually.

Ignorance is the most terrible darkness and some solitary beekeepers have an abundance. Ignorance is the absence of knowledge in general or in relation to a particular subject. Tillotson tells us, "He that doth not know those things which are of use for him to know, is but an ignorant man whatever he may know besides."

What is education? "It is the act of drawing out or bringing into view." And knowledge is power. I consider education the first and most important work for a beekeepers association. "Honest to goodness" beekeepers never get too old to learn, this is why they remain young in spite of old age. "He that knows not and knows not that he knows not is a fool, beware of him." "He that knows not and knows that he knows not is a wise man."

A county association should require each member to own and study at least one book on modern bee culture by some of our well known and recognized authorities, provided or recommended by the association. The association should also furnish each member a correspondence course of at least ten timely lessons, on modern bee culture, delivered at a time when the work, referred to in the lessons should be attended to. These lessons should refer as frequently as practical to the book studied by the member. Letters should be sent the members from time to time during the active season, calling attention to any special work required on account of adverse, unusual or unsuspected conditions of the colonies, weather or honey flow. The members should be kept informed promptly at all times when condition necessitates special attention. State and government bulletins on bee culture should be provided the members, or at least the members should be informed, when and where these bulletins are available.

Frequent educational meetings in-doors and out should be arranged with speakers, instructors and demonstrators present to inform the members how to secure the best possible results from their labor and investments.

As organized education in modern methods of bee culture advances, box-hives, foulbrood and poor beekeeping will disappear. Prosperity will then arrive, happiness follows and the beekeepers' property increase in value.

Short courses should be held annually at places and times when they will be well attended, by not only the members of the association, but as many other beekeepers as possible. The various state organizations should join in an effort to secure successive dates for short courses and arrange with Dr. Phillips and other instructors to assign dates and places where the short courses will be held. Members should be continually urged to subscribe for, and read regularly and continually the

several good bee journals, which are splendid mediums of education and they promote the beekeepers interest.

Your State bee inspectors deserve your organized support and help. In 1917, California beekeepers lost 11,000 colonies of bees by disease alone, valued at $89,000—enough money to keep a national beekeepers association running in high gear up grade for some time. This is an inexcusable loss and should never happen again. Indiana beekeepers must never let such a calamity befall them.

In 1859, Indiana produced 1,224,489 pounds of honey.

In 1869, Indiana produced 395,278 pounds of honey.

This great falling off was caused by the Civil War. In 1879, Indiana produced 967,581 pounds of honey, a substantial recovery over war time production. In 1889, Indiana produced 2,106,817 pounds of honey, a commendable gain of 1,139,236 pounds over 1879 production. In 1899, Indiana produced only 1,681,554 pounds of honey, which was 425,263 pounds less than in 1889. In 1909, Indiana only produced 687,097 pounds of honey, which was 1,419,720 pounds less than in 1889, twenty years before.

1,419,720 pounds of honey
30c

$425,916.00 annual money loss to Indiana beekeepers.

Yet honey eaters during the twenty years intervening increased constantly. From this I feel that the Indiana beekeepers are in great need of educational information.

In olden times beekeepers had to rely on their own efforts in God's great out-door school, for their information, which is a marvelous educational institution of truth.

George Washington must have been a diligent student in God's out-door university, for we are told, he was one of the best educated men of his time, although a very poor scholar.

Francois Huber, without eyes of his own made some most wonderful and important observations and discoveries of bee behavior, through the eyes of a devoted wife and a faithful intelligent servant. No man with all his faculties can read Father Langstroth's praise of Francois Huber, the blind apiarist, without shame and wonder. When a man learns to observe correctly and interpret truthfully, the wonderful lesson of nature, he is struck with a profound reverence for God's great wisdom and goodness in providing in abundance, everything needed, for man's fullest harmonious spiritual, mental and physical development.

Our Beloved, Wm. McKinley was a splendid example of a well balanced, spiritual, mental and physical development—physically mature and strong, mentally pure and powerful, spiritually inspired and reconciled to God's will; prepared and ready for the sudden and startling ending of his mortal existence. Only a super human overflowing with a Christian spirit under such disconcerting circumstances imposed on McKinley by his assassin, could have uttered, spontaneously, without forethought, preparation or meditation—the miraculous diction—"God's Will be Done." His only concern was for his invalid wife and the demented fiend that fired the fatal and fateful shot.

Beekeepers are not now handicapped for the want of reliable and complete information on bee culture and if they are not successful, they have no one to blame but themselves.

Social intercourse in a beekeepers association can accomplish much along this line. It should promote pleasure, secure benefits and develop happiness by imposing social duties upon individual members, who should be required to cultivate companionable good fellowship, brotherly spirit and personal friendliness. Frequent social meetings should be held indoors and out with amusement and entertainment arranged by the association for the promotion and development of friendly acquaintance and exchange of ideas, for *when two beekeepers exchange ideas,* both are benefitted with no loss to either.

The executives of the association should exercise a feeling of fatherly interest and responsibility in each individual member's welfare. They should compile and distribute results of experience and all other beneficial information freely and frequently. They should maintain a sympathetic, fatherly interest and activity in guiding, instructing and helping each member; for the association's future success is in exact ratio to the individual member's success and loyalty. Members should feel free at all times to look to and expect from a well conducted association, the assistance and help a mother, or father would extend a child. A tender word of encouragement or sympathy at the proper time, is frequently the turning point in a man's life and an association should be deeply interested in the success, happiness and welfare of its members. Fraternalism is always present when genuine beekeepers get together. The beekeepers fraternal spirit is proverbial. This spirit should be jealously guarded and faithfully cultivated by the members of an association to secure the best possible results and benefits. Brotherly love, kindly advice, timely help and unselfish assistance, with earnest encouragement, will do more to build up an association, than anything I know of.

Brotherly interest of each member in the success, happiness and welfare of every other member is a most important thing for the fullest development of an association, and will result in the greatest measure of loyalty and cooperation.

Influential exertion should never cease and should be used to its utmost for the beekeeping industry. When the beekeepers of the United States are organized as they should be, they can, like our grand United States, command the attention, admiration and respect of the world, secure much needed legislation, appropriations and law enforcements, as well as protect the beekeepers' interests and investments generally. A strong national organization will attract the attention, respect and cooperation of others interested in apiculture and related pursuits.

Our government, states and counties are ready and willing to help the beekeepers whenever and wherever they display sufficient interest in their own welfare to help themselves. You hear a lot about California beekeepers and California honey production. That is the result of influence brought about by effective cooperative organization and publicity.

California honey producers receive from three to twenty cents per pound less for their honey than Indiana beekeepers receive at retail. This difference is the cost of distribution, and represents the charges made by the transportation companies and middle men for their services in bringing the honey from the California producers to the Indiana consumers. In spite of this financial handicap, the California beekeepers are organized and have an influence that is very valuable.

As individuals, we are constantly knocking and complaining about our public officials. This seems to be a weakness of human nature, we abuse them on every occasion for what they do and do not do, as well as condemn them unmercifully for the mistakes they make, but we never think of taking the slightest pains to compliment or thank them for the many good things they do accomplish. We seldom tell them what we want done, but expect them to find out our wishes and needs, the best way they can. This is neither fair or reasonable. Our public servants should be heartily supported and helped in every way possible by backing them up in their efforts to help us and this can be done most effectively through an organization. We owe public officials a great deal for the untiring work they have done in behalf of the unorganized and indifferent beekeepers.

A properly organized and efficiently managed beekeepers' association will cost its members nothing; in fact, it should prove a profitable investment and pay handsome dividends. The supply houses and honey consumers are perfectly willing and stand ready to pay all the expense and a surplus besides. This very thing was accomplished by the Vigo County Beekeepers' Association in 1919. To realize the saving made possible by cooperative buying and selling, it should be the association's business to buy for its members, the best possible supplies at the lowest possible prices and sell their honey in the most favorable markets at the most attractive prices.

In 1919, the Vigo County Association of fifty-three members, with an annual dues of $3.00 each, making a total of $159.00, held thirty-three educational meetings, five indoors, and twenty-eight field meetings, attended by one or more good instructors. Each member was provided with one copy of Pellet's "Productive Beekeeping," worth at retail then, $2.00. A correspondence course of ten timely lessons in modern bee culture was furnished the members, during the active season covering the following subjects: Preparations for the honey flow, spring management, disease treatment, transferring bees, swarm control and methods of increase, comb-honey production, extracted honey production, preparing and marketing honey, fall management, wintering bees.

A number of letters were mailed the members during the season calling their attention to starvation and a number of other unsuspected dangerous conditions. The books furnished the members were purchased by the association in quantity at wholesale prices, the difference between the retail and wholesale price of the books in addition to the one dollar covered the cost of preparing the lessons, postage, mailing and all other expenses to conduct the association business and at the end of the year a nice cash balance was in the treasury. During the season,

the association purchased for its members $3,123.64 worth of supplies, saving its members $655.27, an average saving of $12.36 for each member, which you must admit is a handsome dividend on a $3.00 investment, In June, 1919, a four days' automobile tour for the members of the association was conducted by our genial State bee inspector, Mr. Yost, with his guest, Mr. Edwin Ewell, of the Michigan Extension Department of Beekeeping, which we considered quite an honor, as Mr. Ewell's presence helped a great deal in making it, not only an enjoyable, but very successful event. Eighteen new members were secured, two badly infected American foulbrood apiaries were eliminated, eleven colonies of bees were transferred from box hives to modern hives, thirty demonstrations were made to 234 beekeepers, eleven colonies of American foulbrood were treated for one member, 477 colonies were inspected in twenty-seven apiaries.

The instructive talks and discussions carried on by and between the members and a splendid instructive address by Mr. Ewell, were enjoyed by all present, including guests from other Indiana counties and the State of Illinois. The Vigo county beekeepers are getting more for their honey this year than last year, for which the association should receive proper credit.

You hear a great deal about the over-production of honey. Do not let that worry you a minute. There is an under-consumption and a lack of interest, as well as effort on the part of the producers to sell their honey. There is not enough honey produced in the United States to make a good display on the grocery shelves.

Disorganized beekeepers are as helpless as babies in trying to stabilize the honey market. If you will pardon a personal remark, I will tell you why the bottlers, as well as all others buying from the producer are unable to pay a fair price. I not only produce honey, but I bottle honey and my requirements compel me to buy from other producers. In purchasing honey, I am very careful to not pay any more than any of my competitors for the same quality of goods. In packing, I make every effort to buy as cheaply as possible, so my competitors will not be able to undersell me.

The producers can not blame the buyer when they do not think enough of their honey to insist upon a fair price. I want to call your attention to what cooperative buying through Indiana State Beekeepers' Association would amount to annually. There are ninety-two counties in Indiana. If each county's supply orders equaled Vigo county's purchases last year, we would have a supply order to place amounting to $287,374.88 at list prices. If each county saved $655.27, the total saving for Indiana beekeepers would be $60,284.84. I have no doubt you will now agree that it will cost the Indiana beekeepers nothing to have a good, strong State beekeepers' cooperative association with plenty of finance to carry on business that will get results.

Why does good candy bring $1.00 or more a pound, while our pure, delicious, fragrant and nutritious honey sells for 25 cents to 30 cents per pound? In 1918, there was manufactured in the United States approximately 1,400,000,000 pounds of candy, although the candy manu-

facturers were limited by the government in their sugar supply. This candy wholesaled for $350,000,000 and was retailed for $700,000,000. The retail price ranged from 40 cents per pound for the cheapest grades to $1.50 per pound for the highest grade of chocolate creams, in more expensive packages. A good grade of chocolate creams, packed in plain boxes, is selling for 80 cents per pound at the present time. There are chocolate creams on the market, packed in attractive, but not expensive boxes, selling for from $1.25 to $1.50.

This demonstrates conclusively to my mind just what is needed to place honey where it rightfully belongs. Honey is a better food than candy and much cheaper. When honey producers adopt the artful, aggressive business methods of the candy manufacturers, there will be a constant demand for unlimited amounts of honey at astonishing prices. Honey must be supplied the public constantly in sufficient quantities, distributed evenly, yet broadcast everywhere, always present wherever people are found, the same as candy, cigars, etc., are put on the market. You can find candy and cigars always wherever you go—on trains, in stations, hotel lobbies, cigar stores, drug stores, grocery stores, news stands, interurban stations, pool rooms, billiard halls, bowling alleys, in fact, candy and cigar manufacturers never neglect your wants and convenience.

Never compare honey, God's delicious nectar, collected from God's fragrant flowers, by God's industrious bees and converted, modified and condensed into virgin honey, undefiled by the hand of man, with the unwholesome, adulterated, concoctions sold as cheap syrups, for honey has no competition. It stands preeminently alone as the highest standard of quality and measurement for all other sweets.

QUESTION.—What is the difference between the cost of production of honey and maple sugar?

MR. HUNTER.—I would venture to say that the cost of maple sugar is less than honey. I think the investment is less, and the equipment, outside of the land and trees, if you count that in. The maple syrup man takes his investment, he takes his land and trees in, that may be the answer for the difference in price. He is a man of affairs, a business man. He knows it is costing him something to produce it, and he insists on getting it. That may be the answer.

THE MEMBER.—Find out and tell us next time.

MR. MCNEILL.—The answer is simply that people like maple syrup better.

THE SECRETARY.—How much Karo syrup is used in the United States today, compared with honey?

MR. MCNEILL.—They buy it because it is cheap. You do not find people eating maple syrup and honey, but Karo.

THE SECRETARY.—The big ads in the Sunday newspapers is what sells Karo.

A MEMBER.—The restaurant keepers say they do not serve honey because it is too thick. The syrup they do sell is thin and the restaurant keeper says if the beekeepers can only make their honey of the proper consistency they could sell it.

MR. HUNTER.—A man in Terre Haute that I know makes sugar syrup and flavors it with honey and calls it honey syrup.

MR. MCNEILL.—Yes, and they flavor cane sugar with sample syrup. You are advocating now using honey with this restaurant keeper as a dilution or flavoring.

MR. HUNTER.—I just told what is being done.

MR. MCNEILL.—I don't care what they use my honey for, as long as they sell it. I think it is a good idea, but one of the greatest things against honey is its granulation. You will find a thousand people who have bought a can of honey and used it a few times, and they say it granulated and they don't buy any more. What are you going to do about that?

MR. HUNTER.—I put directions on it and they read it.

MR. MCNEILL.—I tell them about by word of mouth, but they forget it.

THE PRESIDENT.—I want to say that Vigo County, Indiana, has the reputation of being the best organized county in the United States. This is no doubt due to the efforts of Mr. Hunter, with the aid of the State Conservation Department, of which Mr. Yost is the head.

I agree with Mr. Hunter that the way to improve the price of honey is effective organization and business methods. When we get those two things we will not be selling our honey at a loss or at cost, as stated here this afternoon.

I would like to answer Mr. McNeill's question in regard to granulation. If you put your honey in the bottles and heat it after it is in the bottles, it will keep without granulation for a long time. I have had some heated 150 degrees Fahrenheit that I have kept nearly two years without granulation. If you heat it and pour it out cold, it will granulate.

I am going to ask Mr. McNeill to take the chair if he will, as I am supposed to report next.

(Mr. McNeill acted as chairman of the meeting.)

CHAIRMAN MCNEILL.—We will have our president give his talk now on the "American Honey Producers' League," the results of the year's work.

MR. E. S. MILLER.—Mr. Chairman and Members: I am to report as delegate to a meeting of the American Honey Producers' League held in Indianapolis last winter, about the first of February. You will remember, those of you who were present last fall, that the officers and members of the Board of Directors and Executive Committee of the American Honey Producers' League met in the Great Northern Hotel, at the time the Chicago and Northwestern Convention was held. As I happened to be one of those directors, I was taken away from the Chicago and Northwestern meeting before we were quite through.

We arranged for some changes in the constitution of this league. Furthermore, there were various bureaus; the Bureau of Research, the Bureau of Legal Aid, Standardization of Equipment, Legislation Bureau, etc. The heads of those bureaus were appointed at that time, each one of those being empowered to appoint his assistant, and they

went ahead and appointed helpers or assistants in each of these departments.

The first annual meeting was held at Indianapolis. The recommendation of the Executive Committee in regard to changing the constitution was adopted and the reports of these different chairmen of the different committees or bureaus were brought before the convention and adopted.

Since that time they have gone on and done considerable work. I will say that at that meeting at Indianapolis there was represented a large number of states, chiefly in the east, but extending west as far as Colorado, delegates from these different states met there.

According to the constitution of the American Honey Producers' League only delegates are allowed to vote. We had in addition to that quite a number of others not delegates, who were interested. We had a number of honey merchants, and dealers in bee supplies, also government representatives. Dr. Phillips was there, H. F. Wilson of Wisconsin, and various others representing the various governmental activities of the state and nation which had to do with beekeeping. We had a very fine meeting, not a large crowd but we had men there who were big men in the business, and who represented millions of dollars worth of honey production in their various localities, each delegate representing a state or regional association.

I want to try to tell you some of the things that have been done by these different bureaus and by the league as a whole. In the Bureau of Research Dr. E. F. Phillips was appointed chairman or head. They are getting out a pamphlet in regard to the use of honey in making candy and I understand it is to be published before long.

In regard to the Bureau of Legal Aid, Mr. O. L. Hershiser of New York was appointed chairman, and for assistants he appointed Colin B. Campbell of Michigan and some other attorneys to assist him. I was told by Mr. Campbell that 41 different cases have come up, all but one or two of which were settled satisfactorily to the beekeeper. Most of them were cases in which towns and cities tried to prohibit the keeping of bees within corporate limits. I understand there is one such case in Chicago. In all but one or two cases the affair has been settled satisfactorily to the beekeeper. One case I understand has not yet been settled, but probably will be shortly.

C. B. Baxter, of Kansas, was made chairman of the Committee on Equipment and Standardization. Some of us have white honey, some light honey, some light amber, some dark amber, and some dark honey, and if we were to take two samples from different parts of the country we might have a light amber of one beekeeper which is the same shade as the dark amber of another fellow, so it is proposed to make a standard of color and quality, and in this way when we speak of a certain kind of honey we know just exactly what we mean.

The Root people have put out an instrument for standardizing honey, but it doesn't seem to have taken hold very well with a good many beekeepers. Many of them think the price is rather high, but the national organization is trying to get some standard for the grading of

honey, also a standardization of the grading of comb honey. Furthermore they will endeavor to standardize the equipment so that the supplies, and equipment of one manufacturer will be the same in dimensions, as the equipment sent out by another manufacturer, so that we will not have the difficulty that many of us are having: for example, a hive with a cover one-fourth inch too narrow and the bottom board too wide. Some of the dealers I understand send out hives with the bee space below the frames while a majority of them send out hives with space above the frames. If there could be standard dimensions it would save a great deal of trouble among beekeepers in putting the different kinds of equipment together.

Colin B. Campbell was at the head of the Tariff Committee. We know that Congress has been talking of revising the tariff, and through him the league has recommended that a tariff be placed upon honey to keep out the cheap foreign honey, of not less than 45 cents or more than 60 cents per gallon. What Congress will do about this in the future we are unable to tell; it has not yet been threshed out, but it has been presented to the commission which has to do with tariff revision.

Clifford Muth, of Cincinnati, was made chairman of the Committee on Advertising. He has been quite active, and at our meeting at Indianapolis about six thousand dollars was raised for advertising purposes. It was decided to put in a series of advertisements in Good Housekeeping. This magazine has a nation-wide circulation, it is found in every town and every part of the country, on every news stand, and it is read chiefly by the women who do the cooking. It was decided to place in this magazine a one-fourth page advertisement, to run six times, at a thousand dollars for each insertion. I believe that not all the six issues have come out yet, only two or three of them.

We know, all of us, I believe, that honey sales are very much greater this year than ever before. More honey is being sold throughout the country than has been sold since beekeeping began in this country, and in my opinion that is largely due to advertising—not altogether to the advertising in the magazine, but that is a help. There has been much other advertising also. This is one of the things that will help bring honey before the people and raise the price to where it should be, so that beekeepers can make a profit.

Mr. H. F. Wilson, of Wisconsin, was chairman of the Schedule Committee. This schedule was arranged so that conventions were to be held at Springfield, Indianapolis, or in Wisconsin and other states in consecutive order, so that prominent speakers could be obtained to go from one directly to the other. If Wisconsin held its meeting one week, and two weeks later we held a meeting here, and a week later one was held down in Indianapolis, the speakers would have to make separate trips to attend them at the different times, but by arranging these consecutively they have been able to get speakers for all of these meetings. I have a letter sent out by Mr. Wilson in regard to this.

Further than this, they expect in the future to furnish speakers for these different conventions, men who have a national reputation.

In regard to the financial affairs of the league, perhaps some of you think it hasn't done very much, but considering the money at its

disposal, it has done a great deal. This six thousand dollars raised was raised chiefly by people who were not beekeepers; the canners, the supply dealers and various other industries connected in a way with the beekeeping industry furnished the bulk of that money, only a comparatively small part was furnished by the beekeepers themselves. There is a movement now on foot, by which this advertising can be financed without donation, and on a business basis. I believe it can. If we can put the American Honey Producers' League on a business basis so it will pay its own way, I believe it will be a great success, and one of the greatest things for the beekeeping industry that has ever occurred.

It is said there are in the United States eight hundred thousand beekeepers. If every beekeeper would pay ten cents toward the support of the league, it would give the American Honey Producers' League a fund that would amply finance it. If one cent per colony of the commercial beekeepers could be so applied, we would get it back a thousand fold.

As I said at the beginning, the way to bring about better prices and furnish a better market for our honey is to have effective organization. I believe we should have our local organizations, our county organizations. I believe the State organization should be strengthened. There are many ways in which it can be made more profitable to the beekeeping members. I believe we should have a strong National organization, one which is competent to finance itself. We know that everybody is organized, even the farmers. The members of the Farm Federation pay into the organization ten to fifteen dollars, and every up-to-date farmer is a member. This money is used to finance the county, State and the National organizations. If we could have one-tenth part as much as the American Farm Federation gets for financing their State and National organization, we would put honey on a basis on which it would bring us a profit.

CHAIRMAN MCNEILL.—Are there any questions, or any discussion on this paper?

MR. CALE.—Mr. Miller has spoken in his report in regard to this financing of the county, State and National organizations. Walter Diehnelt in North Milwaukee, one of the largest beekeepers in Wisconsin, had a hive in his apiary on which was painted a red cross, and I, curious to know what that emblem meant, asked him. He said, "I am setting aside that hive for the Red Cross Society." "And," he said, "the product of that hive will go to the Red Cross." Now, if every beekeeper would set aside one hive, the product of which would contribute to the finances of the association, he would feel as though he hadn't donated anything.

MR. MCNEILL.—Anybody else?

A MEMBER.—Where is this Good Housekeeping magazine published?

MR. MCNEILL.—I think it is published in New York City. I might say in connection with one thing our President spoke of, and that is a regular epidemic which there seems to be against beekeeping in the last year. He spoke of one Chicagoan being up against it, and I presume

that I am that party. I have been keeping bees since 1913 and never had any trouble or complaint until just this last season, last spring. During the sugar shortage two years ago I produced a good sized crop, and there were a good many that seemed put out about it. There are some people that do not like to see anything going to anybody else that they can't get a little piece of themselves. After that I think their efforts began. There was really no basis for any complaint. I am thoroughly enough versed in the business to know what to do, to know whether a complaint is justified. Of course complaint is justifiable against bees to a certain extent as against everything else. Bees are a nuisance to a certain extent, but if anybody ever had any children and know of any greater nuisance on earth than children; but we have got to have them, and we are going to keep on having them. It is exactly the same way with bees.

The Health Department of the city of Chicago was complained to and without much investigation they ordered me to get rid of my bees. I hadn't got very far into it at that time, but I immediately got busy with the Health Department and they stopped the agitation for a little while until I could get my forces together, which consisted of a letter, after investigation of all the different features legally and every other way, setting forth all the different features that were either complained of or in favor of the bees. At the same time I happened to be going away for a week, and I asked for that time in order to get in my letter after I got back. I wrote out to two or three queen breeders from whom I had been buying bees, and Dr. Phillips in Washington, Gleanings, the American Bee Journal, Mr. LeStourgeon, Mr. Parks of the American Honey Producers League, and with great unity and great promptness they all replied along the lines which I asked, many of them with duplicate copies, one of which I could attach to my letter to the Health Department, and the other I could keep for my files.

That was last spring. Before that the agitation was very strong. Since that time I have heard nothing about it. So it shows one of the activities and that the League is functioning to the great helpfulness of at least one of us. I sent a copy of the letter that I wrote, to Gleanings, but up to this time it has not been published. There was nothing new in it except in the study of the law on the question. Bees are not a nuisance; they cannot be so declared per se, that is in their own particular selves, without some other circumstances. They are a nuisance under certain circumstances. That is if you would happen to have bees immediately near to somebody else's yard or your neighbors were disturbed, or something like that, on the particular merits of that particular case they would be declared a nuisance, but the point of law is that it rests on the doctrine of negligence whether they are a nuisance or not; that is if they are kept with every scientific discovery up to the present time, for the protection of the neighbors and for the proper scientific keeping of bees, then you are not liable for anything that they do unless it is by your negligence. One of the things, for instance, would be to have something which would make the bees fly high if they are in the neighborhood of a community where they are liable to sting. That would be one thing

that showed you were not negligent, by doing things shown to be necessary for the protection of the public. If you are buying new strains of bees all the time, intermixing them, running down and getting cross and mixed strains would be another thing. Another thing would be taking off honey in a scientific way. Such things as those, if they can be established by your neighbors will make you liable if you have neglected them, but if you have not you cannot be held liable.

MR. MILLER.—One or two points I omitted. The American Honey Producers League is furnishing a card 16 by 20 inches, offering a reward for the information that will lead to the arrest and conviction of anyone molesting bees. The reward is one hundred dollars. These can be had at the cost of printing and postage, ten cents, to post in your yards.

Another point I have to make is that the legal department of the American Honey Producers' League are getting out a booklet giving the laws down to date regarding bees, their relation to environments such as have been stated by Mr. McNeill.

A MEMBER.—In reference to a beekeepers' library, I would like to ask Mr. Miller if that was in reference to a beekeepers' library of this society, or was that any library? I would like some information on that, and whether or not it would be advisable to get a permanent home for each society, a permanent place to meet.

(President Miller then acted as chairman of the meeting.)

THE PRESIDENT.—I will try to answer the gentleman's question in regard to the memorial fund. There was a committee appointed, Dr. Phillips of Washington, Mr. Dadant of Hamilton, Mr. Kindig of Lansing, Michigan, and others appointed to receive money for the Dr. C. C. Miller memorial fund. It is proposed to put the subscriptions together, to be used for purchasing books, getting together a library and for its maintenance. The proposition was to put this library in some institution like some of the universities, Illinois, Michigan, or some other state where it could be properly taken care of and maintained. The money would be to furnish this library and maintain it. The beekeepers all over the United States have been solicited to contribute to this fund. They need considerably more money than they have up to the present time.

I think you will find reference to this in nearly every bee journal published. The money can be sent to any of these gentlemen. I think Roots also collect, as well as C. P. Dadant of Hamilton, Illinois, and B. F. Kindig, of Lansing, Michigan. I believe Mr. Kindig's present address is the new state office building, Lansing, Michigan.

THE MEMBER.—I refer to a library for this society.

THE PRESIDENT.—It is a question whether it would be more profitable to purchase a library or whether we would better use that money to assist the organization. I, myself, am inclined to think that organization would be more profitable to the beekeepers at the present time than another library, if we could have access to the library being formed with the C. C. Miller memorial fund. However, that is an open question, subject to debate.

MR. MCNEILL.—I would like to ask Mr. Hunter how, in his association, he can induce men to do all the work necessary to carry on the activities of a small association without some compensation?

MR. HUNTER.—You mean the local work down there?

MR. MCNEILL.—Yes.

MR. HUNTER.—The local work of most associations devolves upon the executives. There are certain members that take an active part and by reason of their being active in it they are usually placed in the executive positions, that is their reward, for activity. We appoint committees and try to get others to take an active interest and support, and we have more or less work done by them. The buying of supplies is up to the Secretary. It is a good deal of work for him to do, but he does it. Of course, the members themselves should make out their own orders and they should be OK'ed by the Secretary and then those orders compiled or placed with the Secretary and pass through the association's hands in order to get the discount the supply houses are willing to give you. You could, of course, appoint someone to look after that thing. To handle it properly you must have someone located at some central point. Terre Haute is the county seat of our county and is accessible to the members. It seems to me the best way is to have a meeting for the purpose of making up your orders. Have each member bring in his requirements, made out on an order, as if he were going to mail it in himself. Let the Secretary submit it to the supply houses and get the quotations on them.

Whereupon the meeting was adjourned until December 6, 1921, at 9:30 a. m.

TUESDAY MORNING SESSION.

Beekeepers and Agriculture.

The President.—Gentlemen, you will please come to order. The Resolutions Committee I would like to meet as soon as we have an intermission, and in the meantime if any of you people have a resolution you would like to have incorporated, please write it out and hand it in, so that we can get all the material together before the committee reports.

Mr. C. O. Yost, chief inspector of Apiaries for Indiana, talked on "Relation of Beekeeping to Agriculture."

The President.—I have one or two criticisms that I wish to offer, not adverse criticism necessarily. In regard to the changing of the tubes of the red clover, it doesn't seem to me worth while, in view of the fact that we have an alsike which is already superior to the red clover. Furthermore, if such a change were to be made, would the farmers plant it in preference to the ordinary red clover? It would be a task to get it started about the county so that farmers would raise that in preference to the ordinary red clover, and alsike is replacing the red clover very rapidly. It seems to me we already have a solution to that problem. Mr. Yost spoke about seeding red clover in oats. My experience is that it is about the poorest way we have of seeding any clover, to sow it with oats, for the reason the oats grows so much more rapidly they take the moisture from the soil and kill the clover. It is much better to seed clover with wheat or rye, or, still better, seed it alone in the springtime very easily. If you have a soil prepared the preceding year, it is a good plan to sow it even on the snow along in February or March.

Answer.—That depends upon whether or not you cut your oats crop. If you cut it for hay, it won't do at all.

Mr. Miller.—Most of the crops are not cut for hay.

Just one other thing, the membership fee. If any of you wish to become members of this association, Mr. Bull will be very glad to enroll you. The fee is one dollar and a half. Some of you perhaps have not yet enrolled. We have here sample copies of the two bee journals, and you get a discount, if you wish to subscribe for either of these journals, and I believe every beekeeper who is really a beekeeper should take one or more of the journals. You can't afford to go without getting all the latest and best information possible to obtain.

One other point that came up in the talk by Mr. Yost was in regard to this bluevine. I believe it doesn't pay to introduce a pest, even if it does give nectar, and I hope that no one will send for the seed of that bluevine, because it is one of the worst pests we have.

QUESTION.—Is it of any value as a fodder?

THE PRESIDENT.—It is of no value, as I understand it, except for honey production.

I want to call attention to the fact that one of the most important things that we have to consider in the honey business is the selling of honey, and one of the most important and effectual ways of selling honey is to advertise more. I would recommend that every one of you who can do so, and especially those living in the small cities and towns, that you advertise locally. There is a movement on foot for State-wide and National advertising. It is going to help, but in addition to this I believe every beekeeper who is producing honey in a commercial way should advertise quite extensively. These advertisements are not necessarily costly. In your home paper, if you live in a town or city of five to twenty-five thousand inhabitants, you can get local advertisements put in for a very small sum. Put them in every week and change them every time, and in these advertisements give some information or make it interesting to the reader. If you simply say "Eat honey," they will skip it, but if you put something interesting there, that gives a little information, and then next week you give a little different information, and next week something else, and the next week after that something different, that will interest the reader and you will find you will work up a much better selling business and it will help the honey producers all over the country if all will do that.

Now, we have a Committee on Resolutions. I wish each one of you who has something which he considers important to put in these resolutions, would write it up and hand it to Mr. Kannenberg, the chairman of the Resolutions Committee and we will go to work on that.

We have one more address, Mr. Cale has a very important and interesting paper, something that will be of value to all of us. We will have a few minutes intermission, after which the Committee on Resolutions will report, then we will be adjourned till 1:30 after receiving this report.

A short intermission was taken.

WHEN TO SPRAY FRUIT TREES.

QUESTION.—Would you mind giving us a few remarks on the proper time to spray and how best to avoid harming the beekeepers and the orchard man. I am having some trouble down in Jackson County.

THE PRESIDENT.—Would you rather have me speak on that or some of these gentlemen, Mr. Yost or Mr. Johnson are working along that line.

THE MEMBER.—Go ahead and answer.

THE PRESIDENT.—I will say one or two things, then I will ask Mr. Yost to talk to us along that line. In spraying fruit trees they should be sprayed not at the time the blossoms are out but about the time the petals fall. There is one firm in Illinois manufacturing a spraying outfit, that advertises and recommends spraying at the time the petals are out. I wrote to them at one time, protesting against that, and it was not effective. Among our neighbors sometimes we can get

together with them and arrange for spraying at other times. I had one neighbor who had quite an extensive orchard, and I sent for some literature on spraying, on postal cards, and I sent it to him and to others around who were spraying their trees. I saw him personally and talked it over and we decided not to spray until late.

I will say further that the American Honey Producers' League through its legal department has settled several cases where beekeepers and fruit growers have not been able to get together on the subject of spraying and poisoning bees. A great deal of difficulty has been encountered in the northwest, in Washington and Oregon, I understand. Now Mr. Yost will you give us something along that line?

MR. WOOLDRIDGE.—How to harmonize the orchard man and the beekeeper? The man who runs a sprayer a good deal like an old-fashioned threshing man, wants to get started early. He gets hold of the weak ones and persuades them to spray while the petals are still on. Can we harmonize them so as to get the orchard man interested by having a few bees, so he won't allow him to spray except at the proper time, so it won't hurt the bees?

MR. YOST.—That is not a new question at all, at least with us in Indiana. For several years we have been having the complaint come to us that some orchard men were spraying when the trees were in full bloom, and that their bees were being poisoned as a result of it, and we were asked whether or not there was a law prohibiting spraying at such time. There is no such law, and it is questionable whether or not we could get a law put through that would be effective and enforced to the point the beekeeper has in mind. But here is what we attempt to do over in Indiana, and it seems to me it is a fair possible solution of the situation: The State entomologists and the agricultural colleges are continually putting out bulletins that are supposed to be for the betterment of producers of farm products, beekeeping and all other lines relating to that subject. It seems that an educational feature is needed, and it seems that if the fruit grower understood his business, he would not allow anyone to spray the trees when they were in full bloom, for the simple fact that he will injure his crop of fruit more than he will do it good.

There is one thing we cannot overcome, and that is this: The recognized appropriate or best time to apply this spray, nearest to the time they are in bloom, is when they are in the pink ready to burst open. Not all the bloom is in that stage at one time, in one day or two single days when 75 to 90 per cent of the bloom were in that particular stage you would find a number open. There is possibly no way conceivable of changing that situation. The bees will work those first blooms as they bear nectar and the weather is fit, and if they are sprayed with something applied at that time by means of which the bees will accept the poison, some of them will do so and carry it home, others will not. Sprays of arsenic that are not offensive will be taken up and carried home, others will not.

Again at the close of the bloom it is advisable, and every fruit grower who is on to his business and well informed knows when the

petals fall is the time to spray. Have you ever seen an orchard or a fruit tree after it was turned brown? You would say, "Now is the time to spray, the petals are falling," yet there are hundreds of bloom here and there through the tree. We have no way of getting away from that unless we can find some spray that is so offensive to the honey bee that they will refuse to take up the nectar.

MR. HUNTER.—That amount of the bloom dangerous to the bees will be a small percentage.

THE SPEAKER.—It would probably be unnoticeable.

MR. HUNTER.—That wouldn't be a serious thing to the beekeeper.

MR. YOST.—One brood of bees reared at that particular time is much more valuable. One is probably worth more than ten or fifteen reared later in the season. The loss would be really greater than you would at first imagine.

MR. WHEELER.—Does that poison ever reach the larvae?

MR. YOST.—I believe so. I don't believe all bees die, because they do not assimilate the food that they carry home. The whole thing resolves itself into this: Our experiment stations and our State entomologists get before these men the impracticability of spraying at that particular time when the blooms are all out. I think it is up to the beekeepers to see to it that proper advice is sent out along this line. I do not believe any man who has fruit trees and enough energy to spray them would spray them if he felt it was injurious to do so at that time. His motive in doing it is not to poison his neighbor's bees, but to promote the growing of a superior crop of fruit, and if he knew that he was doing the wrong thing by using the sprayer at that time, I feel that he would refrain from doing so.

This fall I had a man keep coming to me at North Manchester—a grape grower, who did not know who I was, he did not know I was a bee inspector—and said, "Now, Mr., can you tell me of some way that a man could poison bees when they come around the place eating up the grapes? Can you think of some good plan?" No, I didn't know anything. I said, "Do you have trouble in that line?" Yes. He said the bees were eating up his grape crop every fall. He said, "I will tell you what I think will work. Next fall I am going to make a thick syrup and put poison in it, and I am going to set it out and bait them and poison them, then I will get my grape crop." "You try that on your neighbor's chickens first, and see whether you get into trouble. Do you think it would be logical to put poison bread out to get your neighbor's chickens in your yard, don't you think you would be in trouble?" I told him who I was and said, "If you do a thing like that, sir, we are going to watch you. In the first place the bees do not open your grapes or destroy them as a result of their own activities. Your grapes are diseased, and if you will take the advice of a man who knows how, the bees will not get into your grapes. You will carefully spray them, then you will have no further trouble with bees." Whether or not he will do it we do not know, but we are going to watch him.

MR. WOOLDRIDGE.—Wouldn't it be advisable to advocate at least the orchard man having a financial interest in bees?

MR. YOST.—Yes, that is being done in Indiana and, I think, in a great many places. They come along with the educational feature of it. We try to inform them of the necessity of honey bees in their orchards. The man sees the need of them, he has a good orchard. It will be accomplished possibly in eight years, or nine. The bee is an absolute essential. That has all to be done from an educational standpoint. I believe that is our longest suit, and the bees becoming present in orchards.

MR. SAMUEL CUSHMAN.—At a meeting not long ago in Chicago, among the people who attended some one came up and left his name and said, "I am an orchard man. I am here to find somebody that will put some bees in my orchard. When I was in Baltimore I had heard of an orchardist, one of the most successful orchardists and a very extensive one. I hunted him up to find out if I could put some bees on his place. He had had a few colonies of bees and European foulbrood had nearly cleaned them out. He had neglected them and had no bees there, only one or two colonies. He said he would give me free a location, and a house that I could use for storage, practically a honey-house. It turned out I didn't go there, but I told a friend of mine of it, and he took about fifty colonies down State and he did that for him. A year after, this young man sold out and somebody else bought him out, and the man that bought him out was offered not only the location and the honey-house free, but he said, "I will send my truck up to your place—about twenty miles away—to get your supplies and bring them down, and in the fall I will send my truck up to your place, because I don't want you to take the bees off the place."

MR. MOE.—There is still another subject on which you have not altogether dwelt. You were thinking of one kind of apple. There are many kinds that bloom in different periods. There are also cherry blooms and other blooms in the orchard. All of these come at a different period. We have had, I think, the same difficulty in Wisconsin that you have had nearly everywhere, the conflict between the beekeeper and the orchardist. You might tell us something about spraying. You say that the orchardist does himself injury by spraying when in full bloom. I wonder a little about that. I have treated oats for smut. Some claim you kill a lot of the seed. We kill the weaker seeds and germs, but that is a benefit. It allows the strong ones to grow and survive.

MR. YOST.—I think the orchard man looks at it this way: Although they bloom at different times, he would follow up the before and after system of spraying, he would practice this: If the weaker ones did not survive, and you know that a very small percentage do terminate or complete their intention or purpose, that if he gets too many apple blooms, he thins them down. Any practical fruit grower will do that. I know the fight between the beekeeper and the orchardist along that line has been something like the controversy between the sheep grower and the cattle man.

MR. RESNAUER.—Referring to the poisoning of bees in taking nectar from sprayed trees and taking it home, is there any possibility that it would poison the honey to the extent that it would be injurious to man?

Mr. Yost.—That would depend on the man. One man could take a certain percentage of arsenic and it would hurt him, and another man would take more and it wouldn't hurt him at all. I doubt if a man would take enough to make it dangerous.

Mr. Johnson.—In regard to spraying, there are several articles in the bee journals in the last two months, and where most of the bees are killed is where they are killed by spraying several different times during the season. The bees get it from the plants in the orchard instead of the trees.

Mr. Yost.—I believe we can get together on that if we try. There are complaints that often come in when they really are not operating. The beekeeper and the fruit man can get together on a mutual basis, I believe.

The President.—It is almost twelve o'clock and I would like to have the Resolutions Committee meet with me for a few minutes. The meeting will be adjourned till 1:30, when we will hear the paper by Mr. Cale, of Hamilton, Illinois.

Whereupon adjournment was taken till 1:30 p. m.

TUESDAY AFTERNOON SESSION.

The President.—Gentlemen, if you will come to order, we will proceed.

We have this afternoon the subject, "Relation of Queens to Seasonal Management," by Mr. G. H. Cale, Hamilton, Illinois. Mr. Cale.

The Relation of Queens to Seasonal Management.

(By Mr. G. H. Cale.)

In a general way, it is well known that a good queen is essential to the health, strength, and prosperity of a colony. However, an attempted analysis of the definite relation a queen has to success in the management of bees during the year may be of some value.

It is an axiom in beekeeping that, when other things are favorable, the amount of honey obtained from a surplus flow depends, to a large extent, upon the number and condition of the colonies of bees. Therefore, the object of all well directed manipulation previous to the honey flow is to have colonies overflowing with bees just as the flow begins. The effort to obtain this objective is begun in the fall in the preparation of the winter colony and it is at this time that the influence of the queen is especially noticeable. An inferior queen can now do much to defeat the beekeeper's purposes.

The point has been frequently stressed that to become rapidly strong and prosperous in the spring the colony must contain numerous young, vigorous bees, just before the winter period begins. Colonies that are small in numbers or that have a large percentage of old bees suffer severely in winter and may be quickly reduced to a critical condition. Such colonies begin brood rearing too soon, often in January or February, forcing the bees to expend their energy in maintaining an abnormally high temperature. Under these conditions colonies may die

in winter or be so weak in spring that the queens cannot furnish brood with sufficient rapidity.

In the average strong winter colony there should be, at least, three or four pounds of bees, raised at about the same time, from eggs laid as late as possible in the fall. Since the occurrence of killing frosts usually marks the end of the brood rearing, the winter colony must be secured before this. Three to four frames of brood, Langstroth size, just previous to frost will insure the emergence of 15,000 to 20,000 young bees for winter, but this is an abnormal amount of brood for this time of year, requiring the use of queens which are at their prime in productiveness and activity.

Queens which have been laying one or more seasons rapidly slow down in their egg laying at the end of the season and stop brood rearing

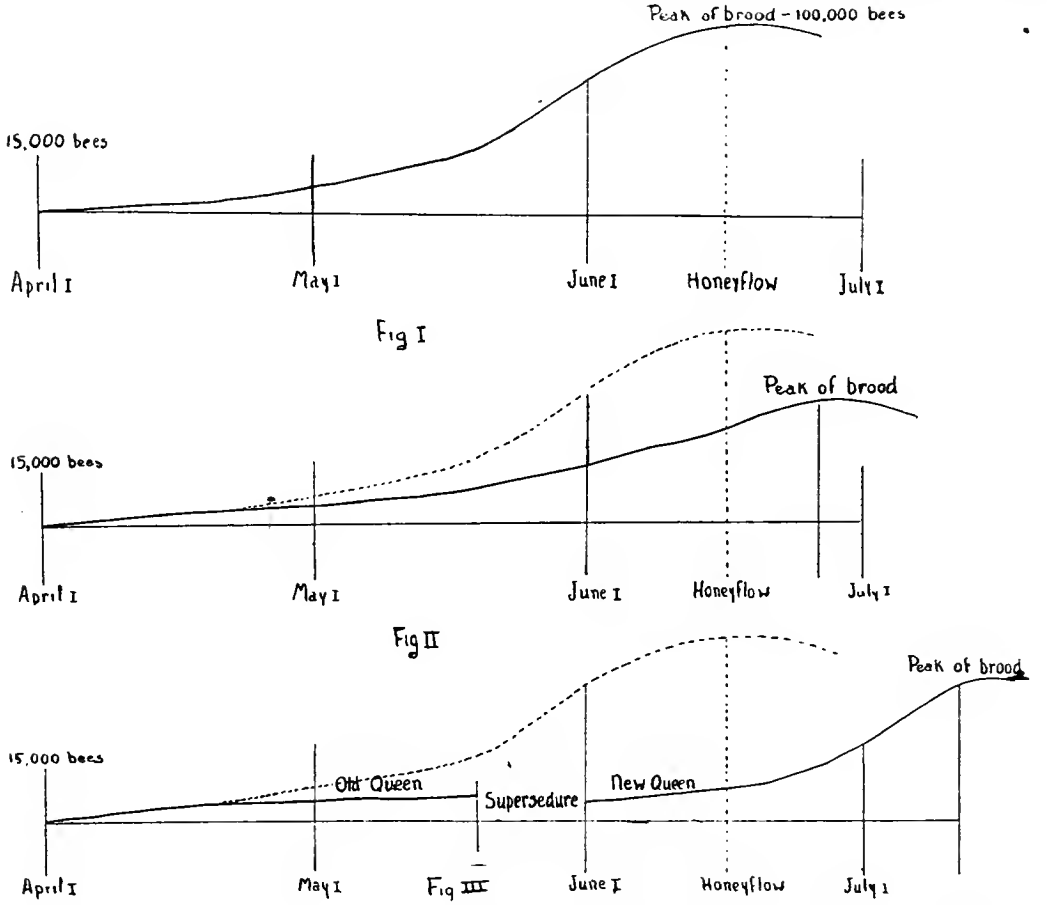


Chart Illustrating Development of Brood Rearing as the Season Advances.

early, especially where there is little nectar from fall flowers. They do not provide ideal winter colonies. The activity of young queens is just the opposite of this. They usually lay eggs continuously until frost, insuring an abundance of young bees.

The writer was once interested in an experiment which entailed the daily counting of the brood cells in eight colonies of bees and some of the results obtained well illustrate this difference in the behavior of queens at this time. Some of these colonies were headed by queens which had been in use one or more seasons and others by young queens

introduced in May, August or September. On October 28th, an average of four frames of brood in all stages was found for the young queens and an average of one frame of sealed brood for the old queens. Colony 1, with a queen which began laying only 16 days before frost, had three and one-half frames of sealed brood on November 3d. Colony 7, with a queen which began laying six weeks before frost, had still 336 eggs in cells on November 3d. Colonies 3 and 4, with queens introduced in May previous to the honey flow, had two frames of brood and no eggs on this date. The older queens had ceased egg laying long before and all of the cells were empty.

In this case, it can readily be seen that the colonies with the youngest queens were in the best shape for wintering in numbers of young bees. It could also be reasonably expected, that, in the spring, these colonies would still have a maximum population sufficiently young and virile to push brood rearing activities rapidly forward.

When brood rearing is renewed in spring, the difference in the behavior of young and old queens has been frequently noted. Here again, old or inferior queens do not serve our purposes. It is normal at this time of year for the colony to increase its adult population until the queen reaches the maximum of her capacity in egg laying. This point has been aptly called the peak of brood rearing and, from the standpoint of honey production, the occurrence of this peak is of extreme importance. For best results in the honey flow, each colony must be built up to its greatest possible strength so quickly that most of the workers shall be young and vigorous when the flow begins.

Brood rearing usually starts moderately in March or April and increases steadily until the first of May or June. If we could accurately depict the behavior of queens during this period it would probably be something like the accompanying diagram. Queens whose activity brings results of this sort are ideal but not all queens meet the requirements. A reduction in prolificness, due to age or inferiority, changes the picture materially. Brood rearing is then moderate and protracted so that the peak of population comes too late.

Demuth has estimated the honey gathering population as five times normal or about 100,000 bees, a large majority of which should be reared in the month or six weeks preceding the flow. This means that 70,000 to 80,000 cells of brood must be present in the hive at about the same time. It means 2,500 to 3,000 eggs each day. This smacks of theory but the facts of experience show that these high requirements are actually met. Doolittle, whose word is well estimated among beekeepers, stated that a good queen is one which will give us 3,000 to 4,000 eggs a day for a month previous to the honey flow. Charles Dadant recorded the presence of 73,000 cells of brood filled in 21 days. In Maryland, with the honey flow from the tulip trees due May 10th, the writer found colonies in the Government Apiary with 14 Langstroth frames, or about 70,000 cells of brood, on April 14th, four weeks before the flow. However, this was only from young queens introduced the previous fall. Brood in this amount, at one time, cannot be expected when a single Langstroth hive is used. These colonies were each occupying two 10-frame hive bodies.

A further experience to illustrate this point was furnished during the past season in the Dadant apiaries. We have a yard of 90 colonies, known as the Gillam yard, located on the east bluff of the Mississippi River, in reach of a large acreage of heartease and Spanish needle from which we obtain a fall flow. The colonies in this yard were largely headed by 1919 queens and, due to the pressure of other work, they were not requeened this year. The fall crop from the 90 colonies was three and one-half barrels of honey, or about 22 pounds per colony. Further down the bluff is the Spencer yard. This started the season with 65 colonies, also headed by old queens. The colonies were weak in spring and built up slowly, finally showing bad infection with European foulbrood. We strengthened and requeened with young queens in June to clean up the disease, reducing the number of the colonies to 40. This was eight weeks before the fall flow. By the time of the flow the colonies were exceptionally strong and the crop from the 40 was three and one-half barrels, or 50 pounds per colony. In this case, the difference in crop between the two yards, due largely to a difference in queens, was 28 pounds per colony, or $2.80 per colony.

There is a further objection to old or inferior queens, often overlooked, in that they are frequently superseded in the spring or summer. To be sure, this gives us young queens, but often so late that the peak of population is delayed until during or at the close of the honey harvest and a reduction in crop results. Supersedure will also increase the amount of swarming since conditions favoring swarming are often present when the supersedure cells are built. In the Dadant apiaries, we use the Large Dadant hives and seldom have many swarms. This year, of about twenty swarms, over 75 per cent were from colonies that were superseding their queens.

So far, this has very evidently been an argument favoring the maintenance of young, virile queens as an essential part of good management. There is one last gun to fire, however, which gives no mean finish to the list of facts and that is the great value of such queens in the control of European foulbrood. Everyone familiar with the disease will agree that young Italian queens do much to keep disease in check. Dr. Miller's slogan was "Strong colonies of strong bees," and he had European foulbrood all around him. Yet he had little of it himself because he kept his colonies so strong that it was rare for a colony to show European at all. When it did show there was a comparatively small amount, easily eliminated. Sturtevant, at Washington, found it difficult to infect strong colonies headed by young Italian queens, even when large amounts of diseased material are fed directly to the bees. He has emphasized the fact that colonies with European foulbrood may be comparatively easily cleaned by strengthening and requeening. The strength of the colony has much to do with recovery. During his experiments, Sturtevant found that of 10 strong colonies, treated by requeening only 20 per cent showed recurrence of the disease; of 20 medium colonies, so treated, 50 per cent recurred; of 14 weak colonies, 57 per cent recurred.

Our own experience this past season with European foulbrood, at the Spencer apiary, has already been mentioned. Of 65 colonies, over

25 had European foulbrood in early summer. These were treated successfully by requeening and strengthening with frames of emerging brood. Indeed, where the brood of the colony was badly diseased it was merely removed, completely or in part, and given in exchange for sealed brood from strong colonies, resulting in the complete elimination of the disease. It must be remembered, however, that a mistake in diagnosis would be disastrous where this method is employed since it would only insure a further spread of American foulbrood.

Since good queens are so much the soul of the colony, it would be within the scope of this article to tell how queens are secured and introduced but this is fundamental matter in which most beekeepers are well schooled and it is not our purpose to include it. There are a few things of importance, however, which may well be mentioned. In our own experience of several years trial, we do not believe it pays to requeen apiaries entirely with queens sent by mail. Supersedure is too common and too many queens fail or are slow to regain their prolificness. We think that the best results will be secured by raising queens from selected stock in our own apiaries. To secure good stock, try several untested queens from several breeders, line them up and watch them. It is usually possible to get a very good breeding queen out of the lot. Queenbreeders will agree that untested queens ship best and there is a better chance of the purchaser getting his queen laying in the hive. On the other hand, a breeding queen is a year old, her ovaries are heavy, and frequently she is injured in the mails. Thus it often happens that a fine queen will be obtained and superseded almost at once.

In selecting a breeding queen from the apiary, individual colony records are almost a necessity. The common practice of transferring brood, from colonies, that are strong to colonies having little brood, makes accurate selection impossible. Queens not sufficiently prolific are thus helped out and at the end of the season the comparative value of queens cannot be known. A good breeding queen should give bees that are gentle, industrious, and not given too much to swarming. A queen which has a fine record for two successive seasons is preferred to one with the same record for one season. Nothing can be decided by the color of queens since queens are very irregular in their markings and often dark queens that look like hybrids produce fine bees. The only way to test queens is to judge their worker progeny.

The frequency of requeening is a matter of varying opinion. Some good beekeepers believe that a queen is good until she shows signs of decline, while others insist on annual or biennial replacement. The proper measure of a queen's term of usefulness is to be found in the severity with which she is used. Seasons and locations vary in this respect, but it must be remembered that in none of the cardinal periods which we have mentioned must a queen offer a chance of failing. In most locations requeening is necessary at least once in two years and it is frequently necessary every year. In extracted honey production, especially where there are two flows a year, as with us, queens are worked very hard and must be replaced often to keep the colonies in prime condition.

The best time of year to requeen is sometimes given as August but, in the Dadant apiaries, this time is inadvisable since it means the removal of queens just before or at the beginning of the fall flow. A break in brood rearing then would be certain to reduce our crop. Unless queens are noticeably failing, they should not be removed during the six weeks previous to a honey flow nor during the first part of the honeyflow. After that they are of little further use, as far as that flow is concerned, and may be taken out at any time. The same is true of the six weeks period preceeding frost. We are compelled, therefore, to requeen, as far as possible earlier in the season and aim to do it during the latter part of the clover flow. This avoids the midsummer dearth when the work would be difficult because of robbing and the failure of colonies to accept new queens. The only other time available to us is towards the close of the fall and this necessitates the introduction of laying queens previously produced and mated in nuclei.

The majority of our queens must bear the burden of brood rearing for the fall crop, the winter colony and the spring crop. It is a good queen that will keep this up for two seasons and, therefore, annual replacement is becoming more and more a part of our manipulation.

A labor saving method of requeening is by the introduction of ripe grafted cells previously produced in cell building colonies. Where this method is used, however, it is important to remember that the raising of cells must be so timed that they may be introduced to the colonies to be requeened and the virgins which emerge may mate and begin laying at least six weeks before either a honeyflow or the end of brood rearing in the fall. The time usually allowed from the starting of cells to the beginning of egg laying is about 25 days. Also, for best results, the mating period should come when there is a nectar flow, otherwise there is too great a loss of virgins and too many are either imperfectly mated or fail entirely to mate. Sufficient extra queens should be raised to introduce to colonies in which this happens. These queens may be mated in nuclei and the latter may be reunited with the colonies from which they were made. Queens left over may be disposed of as desired.

MR. STEWART.—Can you get one hundred thousand bees in one hive?

MR. CALE.—Yes, sir.

MR. WOOLDRIDGE.—I get it every time.

MR. STEWART.—What percentage of queens produce that many eggs?

MR. CALE.—Not as large a percentage as we wish might. That is the ideal condition which we are describing. It is a condition in which we wish all our colonies might be, but a condition in which we find but few of our colonies.

MR. WHEELER.—Were the hives the same?

MR. CALE.—They were exactly the same, they were Dadant hives, somewhat different from any you are accustomed to, 11 frames to the hive.

QUESTION.—Could you tell us whether you know you had swarms or not?

MR. CALE.—We have two ways of determining this. Most of our yards are situated practically at the back door of some house. In other words, we pay for a location and expect that location to give us protection. All our yards, except our temporary yards which in the fall are placed on the Mississippi bottoms, are placed at the back of some house, often close to the house. These beekeepers will tell us uually they sometimes mark the hives from which the swarms come. Sometimes they catch the swarms and hive them for us and we give them a dollar for each swarm they catch. In that way we keep pretty close tab on them. In some cases we find the condition which you are all familiar with. Cells are torn down, and all the appearances of a colony that has swarmed.

FOULBROOD.

MR. STEWART.—I raise the question, does the germ form a disease or does the disease form the germ?

MR. CALE.—The germ forms the disease. I can't prove it here, but I can take you into the laboratory and prove it.

MR. STEWART.—What caused the disease?

MR. CALE.—Bacillus larvae causes American foulbrood, baeillus pluton causes European foulbrood.

MR. HUNTER.—What about mixed infection?

MR. CALE.—Sometimes we have colonies in which there is what is technically known as mixed infection. It was previously supposed that American and European foulbrood could not exist in the same colony, but investigation showed that there were locations in which both diseases might be present at the same time and in the same hive. The number of such cases has been frequent. You may have European and American foulbrood in the hive, and in that case it would be disastrous to perform a treatment in the way I have given. We were taking a chance. If we had had a lot of American there and hadn't seen it, we would have distributed it certainly.

MR. WHEELER.—Can you treat European foulbrood with the shaking method and succeed?

MR. CALE.—You can treat it with the shaking method and succeed, but the number of times you will succeed will be comparatively few compared with the number of times you will succeed the other way. It used to be our belief that the only way to cure any disease was to shake it, and we got into trouble with European foulbrood. Now we believe the proper way is to requeen and strengthen, not shake. The difference is this: the germs that cause the two diseases behave in different ways. The one causing American foulbrood produces a material from the larvae which it attacks which is extended at the base of the cell and fastens down in the cell wall like so much glue. The tight scale is the American.

MR. HAAN.—Would you give a good description of the differenee between American and European foulbrood?

MR. CALE.—I will try, and if I leave out any points Mr. Johnson or Mr. Yost, or those more actively engaged in inspection work, will add. In diseases we have what we call typical disease and we have what are

also known as variations; an inspector has to inspect on variations, but when he does meet a typical one he immediately pronounces it so and so. In a typical case of American foulbrood the attacking organism, Bacillus larvae, attacks the larva usually as it extends in the cell. Quite late in its life, it is not coiled, but extended in the cell. It is quite close to the time of capping over that cell. The germs increasing in number cause the organism to begin to lose its pearly luster and the tubes in the body of the larvae through which the animal breathes—they do not have lungs as we do, they breathe through a system of tubes—begin to show up in a white line, and sometimes the body assumes a grayish cast, which is followed by a yellowish cast. The larva constantly flattening down, lay the length of the cell, head straight out. Finally it flattens down into a coffee-colored mass, loses all its liquid material and becomes a dried scale which has in its process of disintegration fastened itself to the cell walls. Oftentimes the head of that organism remains upward like a gondola and frequently attaches itself to the top of the wall.

This is a positive indication of the disease and is never found associated with anything else, and if seen is always taken as evidence of the presence of American foulbrood.

The cell cap covering the diseased material instead of being high and porous, becomes flattened, loses its brown and becomes a dark greasy color, and very often is pulled partly away so that we have a burst appearance. Also in this disease the fact that it so closely adheres to the cell makes the even mass of scales rather prominent. That is typical of American foulbrood.

MR. WHEELER.—That process goes on before and after it is capped?

MR. CALE.—Yes. And in variations of that we find the larvae attacked at a much younger stage. The inspector can give you many variations of typical American foulbrood. Then there is the typical European foulbrood. The organism which causes this disease is Bacillus pluton. It attacks the larva as it is coiled in the cell at the bottom. The first indication of something wrong is often a dislocation of the larvae. You have seen larvae dislocated. They do not lie in the bottom of the cell, they are out of place, and the color begins to change. The tracheae show up. The color changes to a pasty yellowish mass down to a coffee color, then a loose scale, not adhering to the cell wall, and easily removed. This makes it possible for it to be cleaned out.

Variations from the typical in European foulbrood are much more numerous than they are in the American foulbrood. The organism which was previously supposed to cause the disease, Bacillus alvei, is a larger organism, shows a different appearance from Bacillus pluton, and almost always appears in the same tissues with Bacillus pluton.

It is a secondary factor. We may call it a vulture. This sometimes gives an appearance to the disease which will deceive you into thinking you have American foulbrood.

A MEMBER.—Alvei is American, too, isn't it?

MR. CALE.—No, it is associated with European, but it causes an appearance which may cause you to think the disease is American.

MR. JOHNSON.—About European foulbrood, the way to treat it is to make the colony strong. Suppose you run across a man with only one colony very badly affected. How are you going to treat it?

MR. CALE.—I do not know.

MR. JOHNSON.—My way is to take all the brood away and if you have bees enough to cover one frame well, leave it in, adding the others one at a time if you can, and they will come up.

MR. CALE.—Good suggestion. In California they have shaken everything for years and they are losing thousands of dollars by shaking for European foulbrood, by putting the colony in a weak condition and leaving a small number of germs somewhere. That brings it back in a weaker colony that is less able to handle it than the colony you have shaken before. It doesn't work.

MR. WHEELER.—Will you please tell me one thing? I want to know about the capping in European foulbrood. Do you have holes in the European foulbrood?

MR. CALE.—I don't want to take up the prestige of Mr. Yost and Mr. Johnson, who are active inspectors, but I will answer the question since you ask it. In a case of secondary infection, to use the professional term, in other words, where organisms other than the ones causing the disease have gotten into the meat of the larvae, we sometimes find that larvae die extended in their cells, just as in American foulbrood. and that the caps of the cells are placed over them, and perforations do appear, but that is rare. An infection of that sort requires sending the brood for an examination. I would not trust myself to diagnose a case of that kind. I had two or three last year, and I sent them to Washington.

MR. HAAN.—You say one should test the larvae with a toothpick?

MR CALE.—That is all right where the disease has gotten such a foothold in the larvae that it has reached that state where it ropes. But it is American foulbrood before it reaches that stage. That is one of the tests for it, but remember if you do not get that test, there still may be American. If you get a fine silk-like thread that ropes out, it is pretty good proof that it is American, but at the same time you may not get that result and you may have what looks like disease and it may be American without giving that ropiness. That is merely a stage. On the other hand, there are not very many of us that find the disease until there is some of that ropiness present.

MR. KANNENBERG.—Has the European foulbrood any odor like the American?

MR. CALE.—No. In a good many cases of European foulbrood there is what we call a "sweat-shirt" odor.

QUESTION.—Is there an odor there when the secondary organism gets in?

MR. CALE.—Yes, then we do get a rotten odor.

MR. CUSHMAN.—When ordinary brood dies or gets rotten, do germs get in?

MR. CALE.—Yes, sir.

It is hard to understand the nature of bacteria. How many of you have had the privilege of going into a bacteriological laboratory? They

have methods of capturing organisms from the air and from materials, and they have methods of isolating and taking those organisms by themselves and producing cultures. These show different colors, some red, some orange, some green or white, or milk colored. Some of them have very fantastic shapes, some straight lines, some are circles. They find that the air and the earth and the tissues of living things are permeated with organisms of a microscopic sort. A small number of them produce disease, a very large number of them are beneficial. Two of them have a very decided effect on bees. Bacillus pluton and Bacillus larvae so-called.

MR. WHEELER.—One thing I am curious to know. Yesterday I spoke of placing my diseased brood in a cold cellar and leaving it there till fall. When fall came the brood had all been eaten up and scattered. What had happened to that brood? There is some kind of a germ tnat seems to destroy the brood, entirely eat it up. It was a germ.

MR. CUSHMAN.—You put it away free from bees?

MR. WHEELER.—Yes, entirely. When fall came and I got ready to melt it up, the cells were empty of that brood. I suppose it was done by a germ that devoured it.

MR. MOE.—There is a spore state, I understand, in bacteria. It will live during intense heat and breed for itself. Perhaps that will explain the condition. Ater the disease is through ravaging, to preserve life for the future, in that you may get the whole thing. It is like so many of our seed plants that produce seed that will live through the cold during the winter and propagate life the next year. That may or may not be the answer.

LONG LIVED BEES.

I would like to ask a few questions on the paper, if I may. I have reared some queens and found a study and observation of them very interesting. There is one thing in regard to queen-rearing that was overlooked, that is in regard to long lived bees. Some advocate requeening each year. That has a few points in its favor, but there are great disadvantages in connection with it. It was admitted in this paper that you cannot test out a queen during one year. It will take more years than that. The first year is no test. I have not followed that requeening each year, but of course, it would kill off some of my best queens. We can select the bees from our yard. In that way we cannot control the drones. He goes back a generation or two before he gives an influence.

THE PRESIDENT.—I think we all agree with you that in keeping queens for breeding purposes it is well to keep them longer than one year, so you can be sure of good stock.

The Committee on Resolutions is ready to report. The other members of this committee insisted I was chairman of that committee, so it looks as if it were up to me to make that report. We have a few resolutions which we will consider either together or separately, as you prefer.

The following resolutions were adopted:

WHEREAS, The death of Mrs. A. I. Root has been announced to this convention; therefore, be it

Resolved, That the following letter of condolence be sent:

CHICAGO, ILL., December 6, 1921.

To Mr. A. I. Root, Medina, Ohio.

The officers and members of the Chicago Northwestern Beekeepers' Association in convention assembled extend to you and to all members of your family their sincere and heartfelt sympathy in your recent bereavement.

WHEREAS, The large importations of low-grade honey from tropical and semi-tropical countries has reduced the wholesale market price of all honey below the cost of production; therefore, be it

Resolved, That the Chicago Northwestern Beekeepers' Association respectfully asks that a duty of not less than 40 cents per gallon be laid upon all honey imported into the United States; and

Resolved, further, That the Secretary be instructed to forward a copy of the above resolution to the Tariff Commission of the United States and duplicate copies to Congressmen of this district and Senators from Illinois.

WHEREAS, It is our sincere belief that effective County, State and National organizations afford the only National solution of the problem confronting beekeepers; therefore, be it

Resolved, That the Chicago Northwestern Beekeepers' Association give to such organizations its moral and so far as practical its financial support.

Resolved, That the present President and Secretary be instructed to edit the stenographic report of this meeting, to the end that errors and unimportant matter be eliminated.

MR. CUSHMAN.—The best stenographer in the world, unless she knows as much about beekeeping as the speakers, never could make a report that would give it right to you and me. And I believe that a paper such as Mr. Cale has given us should be used and the discussions relating to it printed, and that he should have the privilege of looking over those notes and making them readable to give the right impression before they are printed, and every other speaker the same way. I have had experience in that and I know how it works out. I think it will add to the value of the report. I received the report last year, and here and there were things you had to correct in your mind in order to get the right impression. I think it is very important, I value that book very much. I think it is very important that everything be edited so it will be just right.

THE PRESIDENT.—The next thing is the election of officers. Who will you have for your President?

MR. KANNENBERG.—I will nominate our regular President, Mr. Miller.

THE PRESIDENT.—Gentlemen, this makes the sixth year in which I have acted as presiding officer of this association. I feel that it is time that someone else take the reins. I do not believe it is a good thing for an association, for one person to remain at the head of the association too long. I think some chance should be given for new men to come in, perhaps with new ideas, to conduct it in a better way, so I must positively decline to be President for the coming year. I want to say I appreciate very much the honor of having been President, for it is an honor, and I appreciate the confidence of the members of this association, but it is my desire for you to elect somebody else for the office for the coming year.

MR. MOE.—Mr. President, if you feel that way I would like to nominate Mr. M. G. Dadant They should be here, and that, perhaps, would fetch them here.

MR. WHEELER.—We want you for President.

THE PRESIDENT.—I can't serve any more, Mr. Wheeler, I thank you.

MR. HAAN.—Mr. President, I move we elect all the officers as they stand, for the present year.

THE PRESIDENT.—I can't serve, Mr. Haan, I positively must decline.

Mr. Cushman was nominated and declined.

Mr. Stewart nominated Mr. C. O. Smith.

Mr. Yost was nominated and declined.

Mr. Kannenberg's name was suggested.

MR. KANNENBERG.—If you don't find a man right in your immediate ranks here, and have to take a new man, Mr. Cale is a good man to elect. As I understand he is with the Dadant apiaries, is a young man with education and training, and I believe you ought to work him in.

MR. WHEELER.—I nominate Mr. Cale. I tried to get Mr. Dadant to accept an office. I ask Mr. Cale if he will accept it?

MR. CALE.—I do not know your membership or where they live. You realize I live at the western edge of the State. It is a $20 trip, we have our own State association that we are interested in more or less, and while I would consider it an honor uncalled for, I think it would be the part of wisdom for the association to elect somebody nearer the headquarters of the association, which seems to be Chicago. I think I would find it difficult to carry on the work.

THE PRESIDENT.—Nearly every year we have a representative of the Dadants present. They ought to be and are interested. I will say that the membership of this association is supposed to cover several states, Illinois, Michigan, Wisconsin, Indiana. We have among our speakers more from Indiana and Wisconsin than we have from Illinois this year. It is doubtful whether it will be advisable to nominate and elect a man not present, and who probably would not accept the office.

Mr. Wheeler and Mr. Haan were nominated.

Mr. Wheeler declined.

A MEMBER.—I think Mr. Cale would be just the man to put in there.

A ballot was taken resulting in the election of Mr. G. H. Cale of Hamilton, Illinois.

Mr. John C. Bull having served six years as Secretary, declined renomination and Mr. F. Haan of DesPlaines, Illinois, was elected Secretary for the ensuing year.

THE SECRETARY.—One question I would like to take up. The Price Committee, what is to be done with it, shall we continue it or drop it?

MR. HAAN.—I believe the Price Committee was a good thing, and I think it ought to be continued. I have felt as though it has helped me along, although I didn't get prices this summer. I do think it

makes prices a little more uniform over the district, and it will tend to give everybody a better show.

ANOTHER MEMBER.—By all means, I think we ought to have a Price Committee.

MR. MOE.—I find it very interesting. I make a motion that the present Secretary continue as a member of the committee, and that the President be made a member and that a third member be appointed as the Price Committee for the ensuing year.

THE PRESIDENT.—Last year a Price Committee was appointed which failed to act for the reason there was some question in regard to its legality, whether it could be construed in a way that it would make trouble. Another point is that the United States Government sends out price letters every two weeks, prices quoted by dealers and beekeepers in every state in the United States. It averages the opinion of 30 or 40 different reporters in the different parts of the country. I agree with you the work of the Price Committee has been very valuable. There is one other point. The funds of the Chicago Northwestern are very limited. I believe we have enrolled thus far at this session about 25 members at $1.50 apiece. There are some expenses in running the office. If we add to that the expense of getting out a price letter probably an assessment would have to be made.

MR. CUSHMAN.—How did you spread the information that this Price Committee sent out?

THE SECRETARY.—By letters to the membership and a mailing list of about 1,000. The mailing list was a picked list made up of beekeepers of 10 colonies or more, so as to get away from mailing to the small beekeeper.

MR. CUSHMAN.—Whether members of the association or not?

THE SECRETARY.—Yes, sir.

A MEMBER.—How many members paid the last assessment?

THE SECRETARY.—Forty-three assessments were sent out and up to date 23 paid, a total of about $80 to be paid. I didn't have money enough to send to Indianapolis for the league, so I dug down in my own pocket and waited for the money till I got it back. Also the delegate paid his own expenses to Indianapolis.

THE PRESIDENT.—There was a motion made that a Price Committee be appointed.

A MEMBER. Second the motion. (Carried.)

It was moved by Mr. Haan, seconded and carried, that the chair appoint the committee.

THE PRESIDENT.—Anything else before we adjourn?

THE SECRETARY.—How are you going to raise the necessary funds to carry on this price letter and how far do you wish to extend it? Do you want to send it to the members only, make a mailing list of a thousand, or what is necessary?

THE PRESIDENT.—Is there a motion? If not, we will leave that to the discretion of the committee.

THE SECRETARY.—We found in the last two years that sending out one letter about the last of July or the first of August, as soon as

we got the government crop report of July 1st, would usually do for one year. At the present time the price is not going to change very much in two or three months.

THE PRESIDENT.—If there is nothing further a motion to adjourn is in order, to meet next December. I think according to the program, arranged by the League Committee, that we will hold the meeting the fourth and fifth of December next year. This will be changed, of course, if desirable.

Whereupon the convention was adjourned.

HONEY VINEGAR.

Most beekeepers at times find themselves in the possession of low grade honey which is unmarketable. Many beekeepers feed back such honey to the bees, but such practice is often very detrimental to the bees. The best means of using this honey is to turn it into vinegar. Honey vinegar is when properly made seldom excelled by vinegar from any other source.

The first step in the fabrication of vinegar from honey is to ferment the honey and water solution and form an alcohol solution. The first process of fermentation should be completed and all the sugar in the honey solution transformed into alcohol. Yeast is required for this fermentation and as all the substances are not present in the honey and water solution for rapid growth of the yeast the substance must be added. The best substances to add to secure the needed elements is ammonium chloride and potassium phosphate. The proportions in which to use them is as follows:

10 gal. of 10% honey solution.
2 oz. ammonium chlorid.
1 oz. potassium phosphate.
Add to this one-fourth cake of compressed yeast softened in warm water.

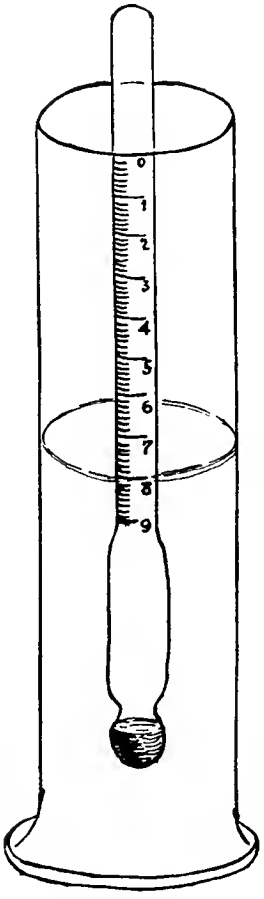


Figure 1.

A hydrometer is necessary to determine the percentage of the honey and water. One of these may be obtained through the local druggist. The hydrometer should be graduated, to the Baume scale, to read from zero to ten degrees by one-tenth degree marks. To test the solution a portion is drawn off into a long glass jar and the hydrometer floated in it, as in Figure 1. Where the surface of the liquid cuts the tube the degrees and tenths of a degree is read and compared with the following table to determine the percentage of honey in the solution:

Degree Baume Scale. 59 degrees Fahrenheit.	Percentage Honey Solution.
.6	1.
1.1	2.
1.7	3.
2.3	4.
2.8	5.
3.4	6.
4.0	7.
4.5	8.
5.1	9.
5.7	10.
6.2	11.
6.8	12.
7.4	13.
7.9	14.
8.5	15.

You will observe that a reading of 5.7 shows a 10 per cent solution which is the proper strength to use. If the reading is higher than 5.7 then more water must be added and if less, then more honey must be added.

A clean barrel makes a good container for the fermenting solution but it must rest on its side with the bung up and open. There should also be two holes bored near the upper side in each end. The holes with the bung will give sufficient ventilation. The yeast ferment must have fresh air for its development. The openings should be covered with gauze to keep out flies and bugs. The solution as described above should have all the honey converted into alcohol in about two or three weeks if the temperature of the room has been nearly constant and about 65 degrees Fahrenheit.

After having the honey converted into alcohol the next step is to change this alcohol in the solution into vinegar. For this a special apparatus will be needed. Obtain a good barrel and saw off each end so as to make two tubs one foot deep. Fit tight wooden covers to these tubs. In each cover make three openings in line. One in the center three inches in diameter and the other two one inch in diameter and five inches from the edge. Corks should be fitted in the smaller of these holes, through one of which passes a thermometer and the other a glass funnel. If a glass funnel with a tube long enough to reach the bottom

of the tub can not be obtained a piece of bamboo may be used. The iron hoops of the tubs should be painted with asphaltum varnish. The thermometer should reach about half way to the bottom of the tub. In each stave in the tub a five-eighth inch hole should be bored. These holes should slope downwards toward the inside of the tub, they should be on the same line. Just one one-quarter inch hole should be made one-half inch below one of the five-eighth inch holes, the latter hole to govern the depth of the liquid in the tubs. A wooden spigot should be fitted to each tub far enough from the bottom that when the tub is drained about one inch of liquid will be left. This is to be used for a starter when the tub is filled with fresh solution. A strip of gauze should be stretched around the tubs over the holes to prevent the entrance of pests and also a piece should be tacked over the large opening in the cover. For a diagram of the tub see Figure 2.

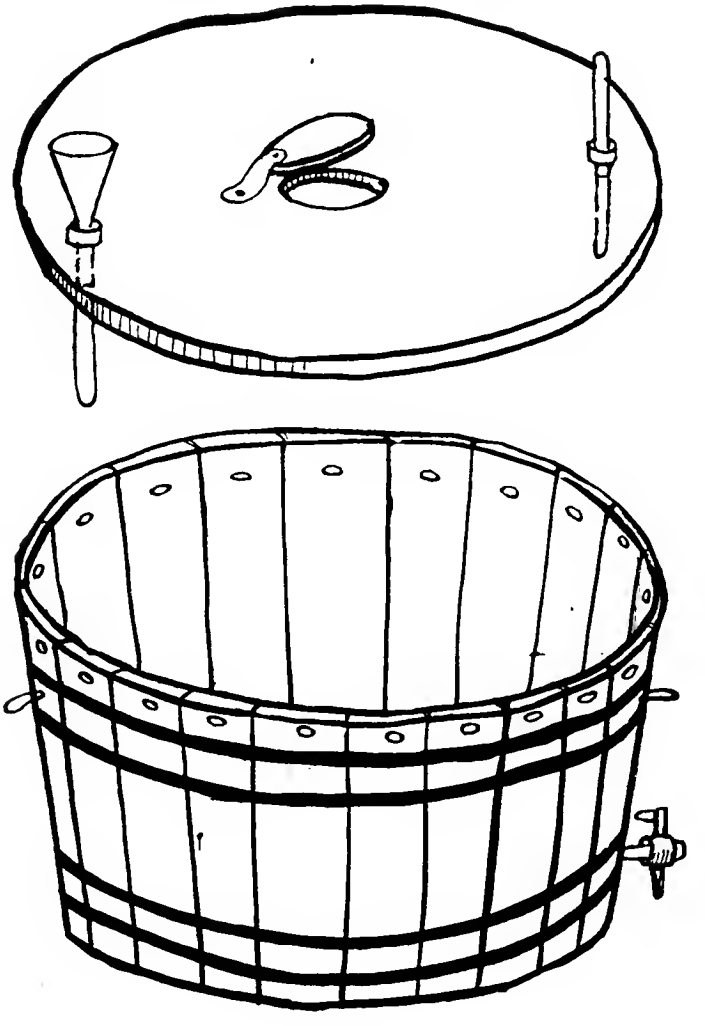


Figure 2.

The barrel and the tub may be arranged as shown in Figure 3. The apparatus should not be disturbed while working except to add more solution and draw off the vinegar. It will not need cleaning more than once a year unless it becomes infected with some undesirable ferments or

pests and then it must be thoroughly cleaned and scalded. The apparatus should be placed where the temperature is nearly constant and around 65 degrees Fahrenheit.

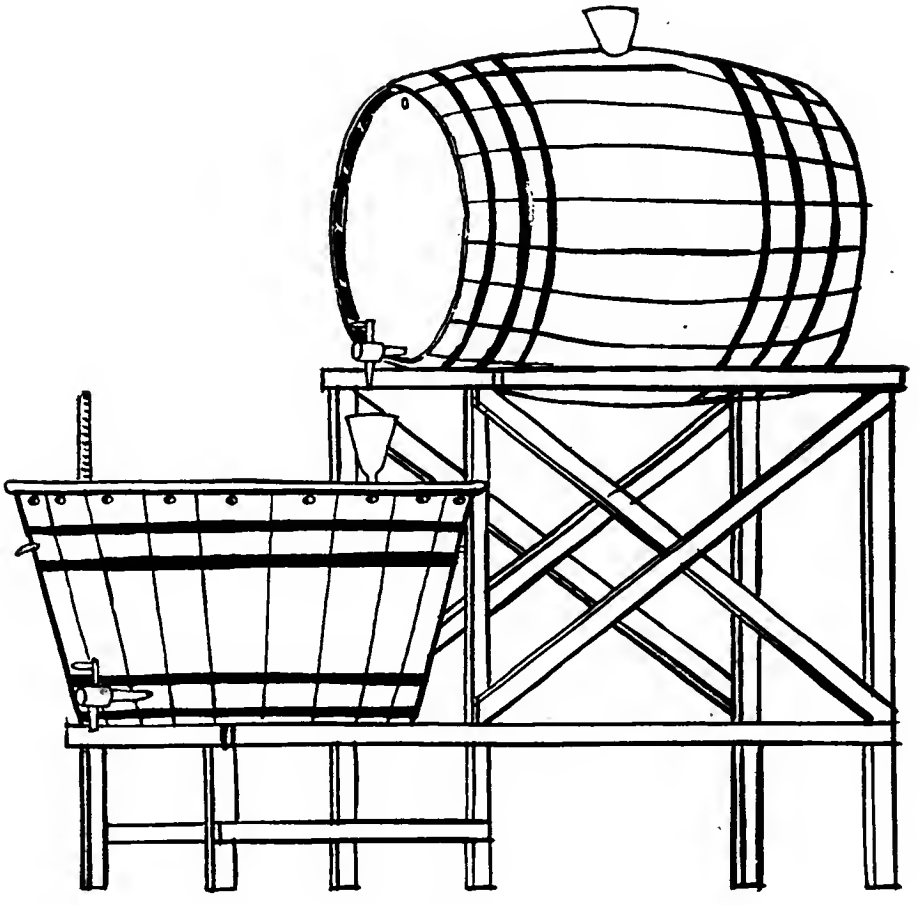


Figure 3.

The solution of fermented honey should be allowed to run into the tubs through the glass funnel in which has been placed a small piece of absorbent cotton, through which it must filter. The first time the tubs are filled they must be inoculated with vinegar ferment and this can best be done by drawing off a quart of the liquid and adding through the large hole in the cover a quart of good cider vinegar. This vinegar should be drawn from a barrel as the bottled vinegar on the market seldom contains any living ferment. About ten days or two weeks after the tubs have been filled all the alcohol in the solution should be turned into acid. The rapidity of the action can be determined by observing the thermometer. The temperature will rise while the change is taking place and when complete, the temperature of the liquid will fall to the room temperature. If the action of the ferment should be too rapid and the temperature rise above 80 degrees the larger opening in the cover should be partly closed by a cover as otherwise there will be a loss in acid by evaporation. To test the acidity of the vinegar the hydrometer is used as in testing the honey solution and the percentage of acid may be determined by comparing the reading with the following table. No vinegar should be sold that does not test at least five per cent acidity:

Baume Degrees.	Acidity of Vinegar Per Cent.
Temperature 59 degrees Fahrenheit.	
.1	1.0
.2	1.5
.3	2.0
.4	2.3
.5	2.6
.6	3.0
.7	3.5
.8	4.0
.9	4.5
1.0	5.0
1.1	5.5
1.2	6.0
1.3	6.5
1.4	7.0
1.5	7.5

FOULBROOD IN BEES.

There are two foulbroods. They are referred to in the United States by the names of European foulbrood and American foulbrood. Both diseases exist in the Eastern as well as the Western Hemisphere, the terms "European" and "American" indicating simply the countries in which technical studies of these diseases were first made. Dr. White, whose microscopical and bacteriological studies have earned for him a well-deserved world renown, discovered the germs that cause these diseases (Circulars 94 and 157 of the Bureau of Entomology, Department of Agriculture of United States.) The germ that causes American foulbrood he named "Bacillus larvae" and to the one that causes European foulbrood he gave the name of "Bacillus pluton." The word bacillus means a stick, and the germs that produce these diseases are minute plants which have the form of sticks and are so small that they must be very highly magnified to be seen. These stick-like germs grow and multiply in the bodies of the bee larvae, causing them to become sick and die. We can judge of the promptness of their reproduction, and of their minuteness, when we read in Cheshire, that a dead larvae frequently contains as many as one billion of these spores.

European foulbrood, at one time popularly called "black brood," being the lesser of the two diseases, will be described first. It has been fully mentioned by Dr. Phillips, in Circular No. 79 of the Bureau of Entomology, to which we refer the student. This disease has been quite prevalent in the United States since 1900.

DESCRIPTION OF EUROPEAN FOULBROOD.

The brood dies early, death taking place, as a rule, before the larvae are capped and while still coiled in the cell. The larvae soon after death turn slightly yellow, and then brown, and, if not removed by the bees, they dry to scales. No ropiness of the dead larvae is usually present in this disease. When there is ropiness present, it is never marked as in the other foulbrood. Some of the larvae may die after capping. The caps may be punctured or not, and are, in many instances, removed by the bees. There is very little odor, and when present it is not so disagreeable as in the other disease. For a more complete description of European foulbrood, see Bulletin No. 810, United States Department of Agriculture, by Dr. G. F. White.

The methods of treatment of the two diseases differ greatly, and are given in forthcoming pages.

American foulbrood, of foulbrood proper, is a more malignant disease than European foulbrood.

(From Langstroth-Dadant Hive and Honeybee.)

DESCRIPTION OF MALIGNANT AMERICAN FOULBROOD.

"In most cases the larva is attacked when nearly ready to seal up. It turns slightly yellow, or grayish spots appear on it. It then seems to soften, settles down in the bottom of the cell, in a shapeless mass, at first white, yellow, or grayish in color, soon changing to brown. At this stage it becomes glutinous and ropy; then, after a varying length of time, owing to the weather, it dries up into a dark coffee-colored mass. Usually the bees make no attempt to clean out the infected cells, and they will sometimes fill them with honey, covering up this dried foulbrood matter at the bottom.

"Sometimes the larvae do not die until sealed over. We have been told that such may be easily detected by a sunken capping perforated by a 'pin-hole.' This is by no means invariably the case. Such larvae will often dry up entirely, without the cap being perforated or perceptibly sunken, although it usually becomes darker in color than those covering healthy larvae.

"The most fatal misapprehension has been in regard to the smell of the disease. In its first stages there is no perceptible smell, and it is not until the disease has made a considerable progress that any unusual smell would be noticed by most persons. In the last stages, when sometimes half or more of the cells in the hive are filled with rotten brood, the odor becomes sufficiently pronounced, but the nose is not to be relied on to decide whether a colony has foulbrood or not. Long before it can be detected by the sense of smell, the colony is in a condition to communicate the disease to others.

AMERICAN FOULBROOD TREATMENT.

"In the honey season, when the bees are gathering honey freely, remove the combs in the evening and shake the bees into their own hives; give them frames with comb foundation starters and let them build comb for four days. The bees will make the starters into comb during the four days and store the diseased honey in them, which they took with them from the old comb. Then in the evening of the fourth day take out the new combs and give them comb foundation (full sheets) to work out, and the cure will be complete. By this method of treatment all the diseased honey is removed from the bees before the full sheets of foundation are worked out. All the foulbrood combs must be burned or carefully made into wax after they are removed from the hives, all the new combs made out of the starters during the four days must be made into beeswax, on account of the diseased honey that would be stored in them. The curing or treating of diseased colonies should be done in the evening, so as not to have any robbing done, or cause any of the bees from diseased colonies to mix and go with the bees of healthy colonies. By doing all the work in the evening it gives the bees a chance to settle down nicely before morning, and there is no confusion or trouble.

"It is well to give the bees some feed, either honey from perfectly healthy colonies, or, if any doubt, then feed syrup of equal parts white

sugar and water, giving the feed in the upper hive above the bees, so as to prevent robbing.

"Honey from infected hives should never be given to bees, unless it is boiled for 30 minutes. Then it may be used safely. Such boiled honey will be very dark colored, and the bees do not like it.

"Never let bees get to infected honey; better bury it deep in the earth.

"This treatment is most reliable, and has been tested for many years in all climates. The greatest number of failures are where the operator is not careful in treating. Ever remember that a single drop of infected honey, or piece of infected honey, or piece of infected comb, carelessly left exposed, will be enough to give the disease to as many colonies as come in contact with it.

"Hives well scraped, are safe to use again, and if the frames are boiled under boiling water for some time, they are also safe to use again. Comb foundation from infected wax will be safe to use, as I have proven in 60 cases in Wisconsin. Queen-cages may contain disease, so, to be safe, I remove the queen into a new cage before introducing, and place old cage and attendants in the fire. If queens are from known healthy colonies, they can be introduced in the shipping cage in which they arrive.

"Avoid all bees robbing infected or just treated hives."

Instead of boiling, which is a slow process, the hives and fixtures may be singed by the flames of a tinner's blow-torch.

The odor of American foulbrood is similar to that of a carpenter's glue-pot.

(N. E. France.)

TREATMENT OF EUROPEAN FOULBROOD.

This was customarily treated like American foulbrood, by removing all the combs containing honey or brood. But in 1905, E. W. Alexander, of New York state, who had much trouble with this disease, found out that removing the queen for a certain length of time, returning her, or preferably giving the bees another of Italian stock at the end of 10 to 22 days, or sometime allowing them to rear another from her brood, usually conquered the disease. This indicates that the disease is not so serious as that of Bacillus larvae. Indeed, the most important point in the case with which the cure may be performed lies in the fact that the dead larva does not become soft or ropy, but remains usually whole and may be carried out by the bees, who even suck the juices of the very young larvae when they die, as noted by Dr. C. C. Miller, who also fought this trouble in his apiary. So the bees clean up the cells and burnish them, if the disease is not too far advanced. Whenever all the diseased brood has disappeared, the hive is judged safe for a new queen. Italian bees have the reputation of being much more immune to European foulbrood than the common blacks, and it is always recommended to introduce a queen of this race.

(The Hive and Honeybee.)

FORMATION OF THE ILLINOIS STATE BEEKEEPERS' ASSOCIATION.

SPRINGFIELD, ILL., *February 26, 1891.*

The Capitol Beekeepers' Association was called to order by President P. J. England.

Previous notice having been given that an effort would be made to form a State association, and there being present beekeepers from different parts of the State, by motion, a recess was taken in order to form such an association.

P. J. England was chosen temporary chairman and C. E. Yocum temporary secretary. On motion, the Chair appointed Thos. G. Newman, C. P. Dadant and Hon. J. M. Hambaugh a Committee on Constitution.

Col. Chas. F. Mills addressed the meeting on the needs of a State association and stated that it was his opinion that the beekeepers should have a liberal appropriation for a State Apiarian Exhibit at the World's Columbian Exposition.

A motion to adjourn till 1:30 p. m., prevailed.

AFTERNOON SESSION.

The Committee on Constitution reported a form for same which, on motion, was read by the Secretary, by sections serially.

Geo. F. Robbins moved to substitute the word "shall" for "may" in the last clause of Section 1, Article III. This led to a very animated discussion, and the motion was lost.

J. A. Stone moved to amend the above-named section by striking out the word "ladies" and all that followed of the same section, which motion led to further discussion, and motion finally prevailed.

Section 2, Article II, relating to a quorum, was, on motion, entirely stricken out.

Mr. Robbins moved to amend Article V by adding the words "Thirty days' notice having been given to each member." Prevailed.

Thos. G. Newman moved to adopt the Constitution, so amended, as a whole. Which motion prevailed.

(See Constitution).

J. A. Stone moved that the Chair appoint a Nominating Committee of three on permanent organization. Prevailed.

Chair appointed as such committee, Col. Chas. F. Mills, Hon. J. M. Hambaugh, and C. P. Dadant.

Committee retired and in a few minutes returned, submitting the following named persons as candidates for their respective offices:

For President—P. J. England, Fancy Prairie.

For Vice Presidents—Mrs. L. Harrison, Peoria; C. P. Dadant, Hamilton; W. T. F. Petty, Pittsfield; Hon. J. M. Hambaugh, Springfield; Dr. C. C. Miller, Marengo.

Secretary—Jas. A. Stone, Bradfordton.

Treasurer—A. N. Draper, Upper Alton.

Mr. Black moved the adoption of the report of the Committee on Nominations. The motion prevailed, and the officers as named by the committee were declared elected for the ensuing year.

Hon. J. M. Hambaugh moved that Mr. Thos. G. Newman, Editor American Bee Journal, of Chicago, be made the first honorary member of the association. Prevailed.

At this point, Col. Chas. F. Mills said:

"Mr. Chairman, I want to be the first one to pay my dollar for membership," at the same time suiting his action to his words, and others followed his example, as follows:

CHARTER MEMBERS.

Col. Chas. F. Mills, Springfield.
Hon. J. M. Hambaugh, Springfield.
Hon. J. S. Lyman, Farmingdale.
C. P. Dadant, Hamilton.
Chas. Dadant, Hamilton.
A. N. Draper, Upper Alton.
S. N. Black, Clayton.
Aaron Coppin, Wenona.
Geo. F. Robbins, Mechanicsburg.
J. W. Yocum, Williamsville.
Thos. S. Wallace, Clayton.
A. J. England, Fancy Prairie.
P. J. England, Fancy Prairie.
C. E. Yocum, Sherman.
Jas. A. Stone, Bradfordton.

FIRST HONORARY MEMBER.

Thos. G. Newman, Editor American Bee Journal, Chicago.

STATE OF ILLINOIS—DEPARTMENT OF STATE.

ISAAC N. PEARSON, *Secretary of State.*

To all to whom these Presents shall come—GREETING:

Whereas, A certificate duly signed and acknowledged having been filed in the office of the Secretary of State on the 27th day of February, A. D. 1891, for the organization of the Illinois State Beekeepers' Association, under and in accordance with the provisions of "An Act Concerning Corporations," approved April 18, 1872, and in force July 1, 1872, and all acts amendatory thereof, a copy of which certificate is hereunto attached.

Now, Therefore, I, Isaac N. Pearson, Secretary of State, of the State of Illinois, by virtue of the powers and duties vested in me by law, do hereby certify that the said, The Illinois State Beekeepers, Association, is a legally organized corporation under the laws of the State.

In Testimony Whereof, I hereunto set my hand and cause to be affixed the great seal of State.

Done at the city of Springfield, this 27th day of February, in the year of our Lord one thousand eight hundred and ninety-one, and and Independence of the United States the one hundred and fifteenth.

[Seal] I. N. PEARSON, *Secretary of State.*

STATE OF ILLINOIS, }
County of Sangamon. } ss.

To Isaac N. Pearson, Secretary of State:

We, the undersigned, Perry J. England, Jas. A. Stone and Albert N. Draper, citizens of the United States, propose to form a corporation under an act of the General Assembly of the State of Illinois, entitled, "An Act Concerning Corporations," approved April 18, 1872, and all acts amendatory thereof; and for the purposes of such organizations, we hereby state as follows, to-wit:

1. The name of such corporation is, The Illinois State Beekeepers' Association.

2. The object for which it is formed is to promote the general interests of the pursuit of bee-culture.

3. The management of the aforesaid Association shall be vested in a board of three Directors, who are to be elected annually.

4. The following persons are hereby selected as the Directors, to control and manage said corporation for the first year of its corporate existence, viz: Perry J. England, Jas. A. Stone, and Albert N. Draper.

5. The location is in Springfield, in the county of Sangamon, State of Illinois.

(Signed) PERRY J. ENGLAND,
JAS. A. STONE,
ALBERT N. DRAPER.

STATE OF ILLINOIS, }
Sangamon County. } ss.

I, S. Mendenhall, a notary public in and for the county and State aforesaid, do hereby certify that on this 26th day of February, A. D. 1891, personally appeared before me, Perry J. England, James A. Stone and Albert N. Draper, to me personally known to be the same persons who executed the

foregoing certificate, and severally acknowledged that they had executed the same for the purposes therein set forth.

In witness whereof, I have hereunto set my hand and seal the day and year above written.

[Seal] S. MENDENHALL, *Notary Public.*

CONSTITUTION AND BY-LAWS OF THE ILLINOIS STATE BEEKEEPERS' ASSOCIATION.

Constitution.

Adopted Feb. 26, 1891.

ARTICLE I.—NAME.

This organization shall be known as The Illinois State Beekeepers' Association, and its principal place of business shall be at Springfield, Ill.

ARTICLE II.—OBJECT.

Its object shall be to promote the general interests of the pursuit of bee-culture.

ARTICLE III.—MEMBERSHIP.

Section 1. Any person interested in apiculture may become a member upon the payment to the Secretary of an annual fee of one dollar and fifty cents ($1.50). (Amendment adopted at annual meeting, December, 1919): And any affiliating association, as a body, may become members on the payment of an aggregate fee of fifty cents (50c) per member, as amended November, 1910.

Sec. 2. Any person may become honorary member by receiving a majority vote at any regular meeting.

ARTICLE IV.—OFFICERS.

Section 1. The officers of this association shall be, President, Vice President, Secretary and Treasurer. Their terms of office shall be for one year, or until their successors are elected and qualified.

Sec. 2. The President, Secretary and Treasurer shall constitute the Executive Committee.

Sec. 3. Vacancies in office—by death, resignation and otherwise—shall be filled by the Executive Committee until the next annual meeting.

ARTICLE V.—AMENDMENTS.

This Constitution shall be amended at any annual meeting by a two-thirds vote of all the members present—thirty days' notice having been given to each member of the association.

By-Laws.

ARTICLE I.

The officers of the association shall be elected by ballot and by a majority vote.

ARTICLE II.

It shall be the duty of the President to call and preserve order at all meetings of this association; to call for all reports of officers and commit-

tees; to put to vote all motions regularly seconded; to count the vote at all elections, and declare the results; to decide upon all questions of order, and to deliver an address at each annual meeting.

ARTICLE III.

The Vice Presidents shall be numbered, respectively, First, Second, Third, Fourth and Fifth, and it shall be the duty of one of them, in his respective order, to preside in the absence of the President.

ARTICLE IV.

Section 1. It shall be the duty of the Secretary to report all proceedings of the association, and to record the same, when approved, in the Secretary's book; to conduct all correspondence of the association, and to file and preserve all papers belonging to the same; to receive the annual dues and pay them over to the Treasurer, taking his receipt for the same; to take and record the name and address of every member of the association; to cause the Constitution and By-Laws to be printed in appropriate form and in such quantities as may be directed by the Executive Committee from time to time, and see that each member is provided with a copy thereof; to make out and publish annually, as far as practicable, statistical table showing the number of colonies owned in the spring and fall, and the amount of honey and wax produced by each member, together with such other information as may be deemed important, or be directed by the Executive Committee; and to give notice of all meetings of the association in the leading papers of the State, and in the bee journals at least four weeks prior to the time of such meeting.

Sec. 2. The Secretary shall be allowed a reasonable compensation for his services, and to appoint an assistant Secretary if deemed necessary.

ARTICLE V.

It shall be the duty of the Treasurer to take charge of all funds of the association, and to pay them out upon the order of the Executive Committee, taking a receipt for the same; and to render a report of all receipts and expenditures at each annual meeting.

ARTICLE VI.

It shall be the duty of the Executive Committee to select subjects for discussion and appoint members to deliver addresses or read essays, and to transact all interim business.

ARTICLE VII.

The meeting of the association shall be, as far as practicable, governed by the following order of business:

Call to order.
Reading minutes of last meeting.
President's address.
Secretary's report.
Treasurer's report.
Reports of committees.
Unfinished business.
Reception of members and collection.
Miscellaneous business.
Election and installation of officers.
Discussion.
Adjournment.

ARTICLE VIII.

These By-Laws may be amended by a two-thirds vote of all the members present at any annual meeting.

C. E. YOCUM,
AARON COPPIN,
GEO. F. ROBBINS,

Following is a copy of the law passed by the Illinois Legislature May 19, and signed by the Governor June 7, 1911, to take effect July 1, 1911:

STATE FOULBROOD LAW.

State Inspector of Apiaries.

House Bill No. 670.

(Approved June 7, 1911.)

AN ACT *to prevent the introduction and spread in Illinois of foulbrood among bees, providing for the appointment of a State Inspector of Apiaries and prescribing his powers and duties.*

Whereas, the disease known as foulbrood exists to a very considerable extent in various portions of this State, which, if left to itself, will soon exterminate the honey bees; and

Whereas, the work done by an individual beekeeper or by a State inspector is useless so long as the official is not given authority to inspect and, if need be, to destroy the disease when found; and

Whereas, there is a great loss to the beekeepers and fruit growers of the State each year by the devastating ravages of foulbrood;

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That the Governor shall appoint a State Inspector of Apiaries, who shall hold his office for the term of two years, and until his successor is appointed and qualified, and who may appoint one or more assistants, as needed, to carry on the inspection under his supervision. The Inspector of Apiaries shall receive for each day actually and necessarily spent in the performance of his duties the sum of four dollars to be paid upon bills of particulars certified to as correct by the said State Inspector of Apiaries, and approved by the Governor.

Sec. 2. It shall be the duty of every person maintaining or keeping any colony or colonies of bees to keep the same free from the disease known as foulbrood and from every contagious and infectious disease among bees. All beehives, beefixtures or appurtenances where foulbrood or other contagious or infectious diseases among bees exists, are hereby declared to be nuisances to be abated as hereinafter prescribed. If the inspector of apiaries shall have reason to believe that any apiary is infected by foulbrood or other contagious disease, he shall have power to inspect, or cause to be inspected, from time to time, such apiary, and for the purpose of such inspection he, or his assistants, are authorized during reasonable business hours to enter into or upon any farm or premises, or other building or place used for the purpose of propagating or nurturing bees. If said inspector of apiaries, or his assistants, shall find by inspection that any person, firm or corporation is

maintaining a nuisance as described in this section, he shall notify in writing the owner or occupant of the premises containing the nuisance so disclosed of the fact that such nuisance exists. He shall include in such notice a statement of the conditions constituting such nuisance, and order that the same be abated within a specified time and a direction, written or printed, pointing out the methods which shall be taken to abate the same. Such notice and order may be served personally or by depositing the same in the postoffice properly stamped, addressed to the owner or occupant of the land or premises upon which such nuisance exists, and the direction for treatment may consist of a printed circular, bulletin or report of the Inspector of Apiaries, or an extract from same.

If the person so notified shall refuse or fail to abate said nuisance in the manner and in the time prescribed in said notice, the Inspector of Apiaries may cause such nuisance to be abated, and he shall certify to the owner or person in charge of the premises the cost of the abatement and if not paid to him within sixty days thereafter the same may be recovered, together with the costs of action, before any court in the State having competent jurisdiction.

In case notice and order served as aforesaid shall direct that any bees, hives, beefixtures or appurtenances shall be destroyed and the owner of such bees, hives, beefixtures or appurtenances shall consider himself aggrieved by said order, he shall have the privilege of appealing within three days of the receipt of the notice to the County Court of the county in which such property is situated. The appeal shall be made in like manner as appeals are taken to the County Court from judgments of justices of the peace. Written notice of said appeal served by mail upon the Inspector of Apiaries shall operate to stay all proceedings until the decision of the County Court, which may, after investigating the matter, reverse, modify or affirm the order of the Inspector of Apiaries. Such decision shall then become the order of the Inspector of Apiaries, who shall serve the same as hereinbefore set forth and shall fix a time within which such decision must be carried out.

Sec. 3. The Inspector of Apiaries shall, on or before the second Monday in December of each calendar year, make a report to the Governor and also to the Illinois State Beekeepers' Association, stating the number of apiaries visited, the number of those diseased and treated, the number of colonies of bees destroyed and the expense incurred in the performance of his duties.

Sec. 4. Any owner of a diseased apiary or appliances taken therefrom, who shall sell, barter or give away any such apiary, appliances, queens or bees from such apiary, expose other bees to the danger of contracting such disease, or refuse to allow the Inspector of Apiaries to inspect such apiary, or appliances, shall be fined not less than $50 nor more than $100.

Approved June 7, 1911.

(Bill passed in the 50th General Assembly.)

BEEKEEPERS' ASSOCIATION.

THE ORIGINAL BILL.*

§ 1. Appropriates $1,000 per annum— proviso.

§ 2. How drawn.

§ 3. Annual Report.

AN ACT *making an appropriation for the Illinois State Beekeepers' Association.*

Whereas, The members of the Illinois State Beekeepers' Association have for years given much time and labor without compensation in the endeavor to promote the interests of the beekeepers of the State; and,

Whereas, The importance of the industry to the farmers and fruit-growers of the State warrant the expenditure of a reasonable sum for the holding of annual meetings, the publication of reports and papers containing practical information concerning beekeeping, therefore, to sustain the same and enable this organization to defray the expenses of annual meetings, publishing reports, suppressing foulbrood among bees in the State, and promote the industry in Illinois;

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That there be and is hereby appropriated for the use of the Illinois State Beekeepers' Association the sum of one thousand dollars ($1,000) per annum for the years 1917, 1918. For the purpose of advertising the growth and developing the interests of the beekeepers of Illinois, said sum to be expended under the direction of the Illinois State Beekeepers' Association for the purpose of paying the expenses of holding annual meetings, publishing the proceedings of said meetings, suppressing foulbrood among bees in Illinois, etc.

Provided, however, That no officer or officers of the Illinois State Beekeepers' Association shall be entitled to receive any money compensation whatever for any services rendered for the same, out of this fund.

Sec. 2. That on the order of the President, countersigned by the Secretary of the Illinois State Beekeepers' Association, and approved by the Governor, the Auditor of Public Accounts shall draw his warrant on the Treasurer of the State of Illinois in favor of the treasury of the Illinois State Beekeepers' Association for the sum herein appropriated.

Sec. 3. It shall be the duty of the Treasurer of the Illinois State Beekeepers' Association to pay out of said appropriation, on itemized and receipted vouchers, such sums as may be authorized by vote of said organization on the order of the President, countersigned by the Secretary, and make annual report to the Governor of all such expenditures, as provided by law.

Itemized in the Omnibus Bill as follows:

For shorthand reporting	$ 200.00
For postage and stationery	50.00
For printing	550.00
Expense of meetings	200.00
Total amount of the appropriation	$1,000.00

The Assembly ruled that this is not to be paid in *lump* but drawn on itemized accounts.

* The Fifty-second Assembly increased the annual appropriation to $1,200.00, which is spent under the approval of the Director of Finance.

CODE OF RULES AND STANDARDS FOR GRADING APIARIAN EXHIBITS AT FAIR AS ADOPTED BY ILLINOIS STATE BEEKEEPERS' ASSOCIATION.

COMB HONEY.

Rule 1. Comb honey shall be marked on a scale of 100, as follows:

Quantity	40	Style of display	20
Quality	40		

Rule 2. Points of quality should be:

Variety	5	Straightness of comb	5
Clearness of capping	10	Uniformity	5
Completeness of capping	5	Style of section	5
Completeness of filling	5		

Remarks: 1. By variety is meant different kinds, with regard to the sources from which the honey is gathered, which adds much interest to an exhibit.

2. By clearness of capping is meant freedom from travel stain and a water soaked appearance. This point is marked a little high, because it is a most important one. There is no better test of the quality of comb honey than the appearance of the cappings. If honey is taken off at the proper time, and cared for as it should be, so as to preserve its original clear color, body and flavor will take care of themselves, for excellence in the last two points always accompanies excellence in the first. Clover and basswood honey should be white; heartsease, a dull white tinged with yellow; and Spanish needle, a bright yellow.

3. By uniformity is meant closeness of resemblance in the sections composing the exhibit.

4. By style is meant neatness of the sections, freedom from propolis, etc.

5. Honey so arranged as to show every section should score the highest in style of display, and everything that may add to the tastiness and attractiveness of an exhibit should be considered.

EXTRACTED HONEY.

Rule 1. Extracted honey should be marked on a scale of 100, as follows:

Quantity	40	Style and display	15
Quality	45		

Rule 2. The points of quality should be:

Variety	10	Style of package	10
Clearness of color	5	Variety of package	5
Body	5	Finish	5
Flavor	5		

Remarks: 1. Light clover honey pouring out of a vessel is a very light straw color; Spanish needle, a golden hue, and dark clover honey, a dull amber.

2. Style of package is rated a little high, not only because in that consists the principal beauty of an exhibit of extracted honey, but also because it involves the best package for marketing. We want to show honey in the best shape for the retail trade, and that, in this case, means the most

attractive style for exhibition. Glass packages should be given the preference over tin; flint glass over green, and smaller vessels over larger, provided the latter run over one or two pounds.

3. By variety of package is meant chiefly different sizes; but small pails for retailing, and, in addition, cans or kegs (not too large) for wholesaling, may be considered. In the former case, pails painted in assorted colors, and lettered "Pure Honey," should be given the preference.

4. By finish is meant capping, labeling, etc.

5. Less depends upon the manner of arranging an exhibit of extracted than of comb honey, and for that reason, as well as to give a higher number of points to style of package, a smaller scale is allowed for style of display.

SAMPLES OF COMB AND EXTRACTED HONEY.

Rule 1. Single cases of comb honey, entered as such for separate premiums, should be judged by substantially the same rules as those given for a display of comb honey, and samples of extracted, by those governing displays of extracted honey.

Rule 2. Samples of comb or extracted honey, as above, may be considered as part of the general display in their respective departments.

GRANULATED HONEY.

Rule 1. Candied or granulated honey should be judged by the rules for extracted honey, except as follows:

Rule 2. The points of quality should be:

Variety	10	Style of package	10
Fineness of grain	5	Variety of package	5
Color	5	Finish	5
Flavor	5		

Rule 3. An exhibit of granulated honey may be entered or considered as part of a display of extracted honey.

NUCLEI OF BEES.

Rule. Bees in observation hives should be marked on a scale of 100, as follows:

Color and markings	30	Quietness	5
Size of bees	30	Style of comb	5
Brood	10	Style of hive	10
Queen	10		

Remarks: 1. Bees should be exhibited only in the form of single frame nuclei, in hives or cages with glass sides.

2. Italian bees should show three or more bands, ranging from leather color to golden or light yellow.

3. The markings of other races should be those claimed for those races in their purity.

4. A nucleus from which the queen is omitted should score zero on that point.

5. The largest quantity of brood in all stages or nearest to that should score the highest in that respect.

6. The straightest, smoothest and most complete comb, with the most honey consistent with the most brood, should score the highest in that respect.

7. That hive which is neatest and best made and shows the bees, etc., to the best advantage should score the highest.

QUEEN BEES.

Rule. Queen bees in cages should be marked on a scale of 100, as follows:

Quantity ..... 40 Style of caging and display..... 20
Quality and variety..... 40

Remarks: 1. The best in quality consistent with variety should score the highest. A preponderance of Italian queens should overweigh a preponderance of black ones, or, perhaps, of any other race or strain; but sample queens of any or all varieties should be duly considered. Under the head of quality should also be considered the attendant bees. There should be about a dozen with each queen.

2. Neatness and finish of cages should receive due consideration, but the principal points in style are to make and arrange the cages so as to show the inmates to the best advantage.

BEESWAX.

Rule. Beeswax should be marked on a scale of 100, as follows:

Quantity ..... 40 Quality 40
Style of display..... 20

Remarks: 1. Pale, clear, yellow specimens should score the highest, and the darker grades should come next in order.

2. By style is meant chiefly the forms in which the wax is molded and put up for exhibition. Thin cakes or small pieces are more desirable in the retail trade than larger ones. Some attention may be given to novelty and variety.

MEMBERSHIP OF STATE ASSOCIATION FOR 1921.

Aikman, H. L., Farmersville, Ill.
Augustine, A. A., R. 2, Dakota, Ill.
Arrowsmith, Mrs. H. P., Gibson City, Ill.
Bishop, Frank, Box 186, Taylorville, Ill.
Bowen, J. W., Jacksonville, Ill.
Boyer, J. T., 308 Wheaton Av., Champaign, Ill.
Beaver, Wallace R., Lincoln, Ill.
Belatti, F. F., Mt. Pulaski, Ill.
Bishop, Elmer, Virden, Ill.
Baxter, Dr. A. C., 1418 Holmes Av., Springfield, Ill.
Bennett, C. S., 308 7th St., Charleston, Ill.
Brown, George E., Franklin, Ill.
Bryant, E. J., 710 Walnut St., Elgin, Ill.
Brelsford, W. H., Kenney, Ill.
Berry, Eugene, R. 4, Taylorville, Ill.
Bear, Wm. F., Buena Vista, Ill.
Berg, Bernard, R. 5, Danville, Ill.
Brigham, William, 1108 E. Oakland, Bloomington, Ill.
Council, J. R., St. Joe, Mich.
Cornelius, R., LaMoille, Ill.
Campbell, E. J., Sullivan, Ill.
Coppin, Aaron, Wenona, Ill.
Coyle, J. F., Penfield, Ill.
Carlson, P. A., 503 S.E. 4th St., Galva, Ill.
Corson, Mrs. Nathan, Pleasant Plains, Ill.
Crum, F. O., Palmyra, Ill.
Davis, Chas. W., Curren, Ill.
Dadant, M. G., Hamilton, Ill.
Downey, Jas. C., Jerseyville, Ill.
DeJarnette, F. J., R. 1, Beason, Ill.
Eisenbise, Ira B., Lenark, Ill.
Fisher, Floyd F., Shirland, Ill.
Galushka, Joseph, 926 E. Pekin St., Lincoln, Ill.
Gheen, Jas. T., Auburn, Ill.
Grover, James H., Versailles, Ill.
Hopps, A. D., LaMoille, Ill.
Helwig, Frank W., Oquawka, Ill.
Harris, J. D., Alahambra, Ill.
Hallock, W. H., 308 W. Walnut, Fairbury, Ill.
Hayes, G. M., Curren, Ill.
Hohertz, S. J., LaMoille, Ill.
Holcomb, Otis, LaMoille, Ill.
Hansell, Charles, Minooka, Ill.
Hettle, Henry, Marine, Ill.
Heilman, Geo. A., 209 Sabella, Pekin, Ill.
Holman, C. S., R. 2, Livonia, Ill.
Head, Clarence A., 25 Hamilton Av., Elgin, Ill.
Head, Arthur E., 264 Seneca St., Elgin, Ill.
Jefferies, A. E., R. 5, Springfield, Ill.
Kildow, A. L., Putnam, Ill.
King, Harry, R. 5, Springfield, Ill.
Kommer, Edwin J., Cambridge, Ill.
Kommer, Elmer, Woodhull, Ill.
Lewis, G. B., Co., Watertown, Wis.
Lloyd, Geo. B., R. 1, Box 118, Springfield, Ill.
Lake, Geo., Illiopolis, Ill.
Leib, E. L., Winchester, Ill.
Lotz, Mrs. Ollie, 830 Mayo St., Carlinville, Ill.
Lind, M. H., Bader, Ill.
LaFond, John, Oquawka, Ill.
Logan, Alton L., Edwardsville, Ill.
Mann, Louis, Lincoln, Ill.
Morphis, Rev. J. H., Farmingdale, Ill.
Matthew, O. R., R. 3, Beardstown, Ill.
Moody, Geo. W., Box 11, LaMoille, Ill.
Morgan, Moses C., Blue Mound, Ill.
May, Fred H., Box 34, Meredosia, Ill.
McDaniels, J. E., Girard, Ill.
McClure, J. H., Roodhouse, Ill.
Northern, H. P., R. 4, Versailles, Ill.
Norberg, Arthur J., Spring Valley, Ill.
Nitsche, Fred W., 646 W. 103rd St., Chicago, Ill.
Ostemier, John, Mechanicsburg, Ill.
Oberland, Wm., Penfield, Ill.
Olson, Lewis, Andover, Ill.
Penningdorf, F. C., R. 4, Elgin, Ill.
Robbin, Daniel E., Payson, Ill.
Richards, J. C., Scales Mound, Ill.
Ritter, W., Genoa, Ill.
Stewart, W. H. H., Emmerson, Ill.
Seastream, Geo., Pawnee, Ill.
Snyder, W. H., 2121 N. Water, Decatur, Ill.

Stone, Jas. A., Farmingdale, Ill.
Smith, B. J., R. 4, Tuscola, Ill.
Shearer, Hallocfl, R. 2, Mt. Carmel, Ill.
DeSort, F., 1308 Ottowa St., Lincoln, Ill.
Swezey, Mrs. J. W., Grand Prairie, Ill.
Suicock, Wm. E., R. 1, Scales Mound, Ill.
Stickler, Wm., Lexington, Ill.
Stuber, Fred, R. 4, Princeton, Ill.
Stutt, Alfred A., Lincoln, Ill.
Smith, W. H., 1807 E. Main, Danville, Ill.
Schwinn, George, 917 Carolina, Pekin, Ill.
Turner, W. P., 111 Dwryea Av., Peoria Heights, Ill.
Tyler, S. A., Emden, Ill.
Tobin, John F., Rochester, Ill.
Tresidder, Roy, Scales Mound, Ill.
Toth, John & Son, R. 3, Peoria, Ill.
VanButscle, Louis, 720 N. Center, Collinsville, Ill.
Valerines, Chas., Elkville, Ill.
Vaughn, M. M., Latham, Ill.
Voight, Walter, 45 Bismark, Danville, Ill.
Watcher, Martin, R. 4, Hinsdale, Ill.
Williams, W. H., 1015 Bacon, Pekin, Ill.
Wiley, C. H., R. 1, Harrisburg, Ill.
Withrow, G. M., Mechanicsburg, Ill.
Wuetig, Christian J., 118 Vermont, Blue Island, Ill.
Wheeler, J. C., 622 Austin Boul., Oak Park, Ill.

MEMBERS OF THE CHICAGO-NORTHWESTERN BEEKEEPERS' ASSOCIATION.

Blume, W. B., Norwood Park, Ill.
Brown, E. W., Box 117, Willow Springs, Ill.
Bruner, E. H., 3836 N. Kostner Av., Chicago, Ill.
Bryant, E. J., 710 Walnut Av., Elgin, Ill.
Bull, John C., 1013 Calumet Av., Valparaiso, Ind.
Coppin, A., Wenona, Ill.
Cushman, Samuel, Room 401, 105 W. Monroe St., Chicago, Ill.
Dadant, L. C., Hamilton, Ill.
Haan, J. Frank, R. F. D., DesPlaines, Ill.
Haberman, Mrs. Wm., Garden Lodge, Lodi, Wis.
Hammett, Mrs. M. L., 400 Belle Plaine Av., Chicago, Ill.
Hassinger, Edward, Jr., Greenville, Wis.
Howe, Dr. A. O., 4818 Lincoln Av., Chicago, Ill.
Kelty, R. H., East Lansing, Mich.
Kohr, Chas. F., 9311 Western Av., Chicago, Ill.
Kragness, T. A., 6031 Wentworth Av., Chicago, Ill.
Kuback, Chas., Edison Park, Ill.
Lewis, G. B., Co., Watertown, Wis.
Lyman, W. C., Downers Grove, Ill.
MacNeill, J. A., 11339 S. Irving Av., Chicago, Ill.
McQueen, Geo., R. 3, Elgin, Ill.
Meineke, E. A., 3852 N. Kenneth Av., Chicago, Ill.
Miller, E. S., 508 College Av., Valparaiso, Ind.
Mould, E. L., Elgin, Ill.
Mundell, J. M., R. A, Gary, Ind.
Muth, Clifford, 204 Walnut St., Cincinnati, Onio.
Neusiis, Wm., Yorkville, Ill.
O'Brien, John, R. 2, Newark, Ill.
Reichert, John G., 3227 Aurora Av., Berwyn, Ill.
Rettig, F. J., Wabash, Ind.
Rife, C. F., Naperville, Ill.
H. Roehrs, Hinsdale, Ill.
Root, The A. I., Co., 230 W. Huron St., Chicago, Ill.
Rothe, E. C., Kennan, Wis.
Scripter, Otis, Zion, Ill.
Sievert, F. W., Porter, Ind.
Sopher, Frank, 8043 Muskegon Av., Chicago, Ill.
Ulman, P. T., Lansing, Mich.
Weston, N. A., 601 E. Daniel St., Champaign, Ill.
Yost, C. O., Department of Conservation, Indianapolis, Ind.
Young, Wm. C., Box 249, DesPlaines, Ill.
Zilligen, Geo., 15030 Wood St., Harvey, Ill.
Kannenberg, C. F., 1114 Augusta St., Oak Park, Ill.
Amburn, Oscar, Mindoro, Wis.
Ecklund, Oscar, 682 Raymond St., Elgin, Ill.
Brown, Henry F., Newark, Ill.
Nitsche, Fred W., 646 W. 103rd St., Chicago, Ill.
Moe, H. H., Woodford, Wis.
Hintz, August J., R. 2, LeMont, Ill.
Coyle, J. F., Penfield, Ill.
Tudor, Carl H., 137 Evans Av., DeKalb, Ill .

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